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CONSTRUCTION CO., INC.

June 30, 2009

William H. Cormier, Director  
Administrative Policies & Compliance  
University of California, Los Angeles  
2255 Murphy Hall  
Los Angeles, CA 90095-1405

Re: Alleged Unethical Conduct by UCLA Professors Mary D. Nichols and John R. Froines

Dear Mr. Cormier,

Thank you very much for your May 27, 2009 response to my April 13, 2009 complaint. I fail to understand how you could conclude that my allegations about Professors Mary D. Nichols and John R. Froines do not constitute scientific misconduct as defined in ***UCLA Policy 993*** (<http://www.adminvc.ucla.edu/appm/public/993.htm>). Based on my educational background and my 44-year experience as a successful businessman in California, I find that the behavior of Professors Nichols and Froines does not support Policy 993's strongly worded General Policy. Specifically, their "selective research tactics" do not support "fostering a climate conducive to research integrity in accordance with the University's Policy on Integrity in Research." Additionally, I strongly believe that my allegations constitute **unethical conduct** based on the ***UC Standards of Ethical Conduct*** (<http://www.universityofcalifornia.edu/compliance/ethics/ethicalconduct.html>).

The sentences from these ***Standards*** that most directly apply to my allegations are as follows:  
Purpose "In that spirit, the Standards of Ethical Conduct are a statement of our belief in **ethical, legal and professional behavior in all of our dealings inside and outside the University**"  
(2) "Members of the University community are expected to conduct themselves ethically, honestly and with integrity **in all dealings**. This means principles of fairness, good faith and respect consistent with laws, regulations and University policies govern our conduct with others **both inside and outside the community**"  
(4) "Members of the University community are expected to become familiar with the laws and regulations bearing on their areas of responsibility. **Many but not all** legal requirements are embodied in University policies"  
(7) "All members of the University community engaged in research are expected to conduct their research with integrity and intellectual honesty **at all times . . . .** Members of the University community engaged in research are not to . . . **knowingly omit data or results to misrepresent results in the research record . . . .**"

Essentially, your policy states that to be a member in good standing, your ethics cannot be compromised when you are off the UCLA campus. This is the main thrust of my complaint. I have presented numerous incidences of compromised ethics but your response attempts to narrate my complaint as a “public policy issue and not issues of potential research misconduct.” Am I to assume that it is acceptable with UCLA to allow some “modification” of a member’s ethics when “off campus”? Not according to the Standards of Ethical Conduct, which state that “The University might have reason to examine the outside activity of an employee in circumstances where serious misconduct there reflects unfavorably on the University . . . .” I contend that my allegations against Professor Nichols and Professor Froines constitute very serious misconduct and, when fully brought to light, will reflect quite seriously on your fine university. Sunlight is a great disinfectant, and I intend to provide the light supported by research from credible and accomplished scientists. The actual economic damage brought about by CARB’s edicts has the potential to preclude California from emerging from our current economic debacle for a decade or more, if ever.

You also state that UCLA Policy “applies to research conducted by UCLA faculty or academic appointees under the sponsorship of UCLA and is narrowly focused on specific instances of fabrication of data, falsification or plagiarism.” Falsification is defined (in part) in Policy 993 as “manipulating Research materials, equipment or processes, or **changing or omitting data or results**, such that the Research is not accurately represented in the Research Record”. THIS IS EXACTLY WHAT HAS BEEN DONE. Under the specific direction of Professor Nichols, supported by the research of Professor Froines, CARB has excluded or attempted to diminish any data that conflicts with their agenda. By the very virtue of their UCLA professorships, they drag your institution into this fray. This will not bode well with the massive California business community that supports your fine organization. A failure to review this behavior by two of your professors, under the guise that they do not represent UCLA when dealing with public policy, will not go unnoticed by your benefactors, especially those severely impacted by the unnecessary regulations.

I take specific issue with your statement that “the information you have provided was neither credible nor specific enough under our policies to warrant a research misconduct inquiry.” A substantial amount of very specific evidence was presented in my April 13, 2009 allegations. I could have sent you several hundred pages, but abbreviated the text to not overwhelm you. Thus, I believe that my allegations deserve a more careful evaluation. My concerns are supported by at least ten very fine physicians and scientists who have submitted public comments to CARB during the past year: John D. Dunn, M.D., J.D., from Texas; James E. Enstrom, Ph.D., from UCLA; Anthony Fucaloro, Ph.D., from Claremont McKenna College; Frederick W. Lipfert, Ph.D., from New York; Matthew A. Malkan, Ph.D., from UCLA; Henry I. Miller, M.D., from the Hoover Institution; Suresh H. Moolgavkar, M.D., Ph.D., from the University of Washington; D. Warner North, Ph.D., from Stanford University; Robert F. Phalen, Ph.D., from UC Irvine; and S. Stanley Young, Ph.D., from the National Institute of Statistical Sciences.

In order to make my allegations as directly relevant to UCLA as possible, I request that you further assess my allegations regarding Professor Froines, who has been a full-time faculty

member at the UCLA School of Public Health since 1981. To make my case against Professor Froines as strong as possible, I have used the Internet (Google.com, PubMed.gov, and www.ucla.edu) to formulate additional allegations of falsification that add to my original April 13, 2009 allegations (Attachment A).

Elinor W. Fanning, a UCLA toxicologist, and John R. Froines are the first two authors of a February 2009 peer-reviewed paper “Particulate Matter (PM) Research Centers (1999–2005) and the Role of Interdisciplinary Center-Based Research” *Environmental Health Perspectives* 2009;117:167–174 (<http://www.ehponline.org/members/2008/11543/11543.pdf>) (Attachment B). Quotes from the Abstract are: “Objective: The U.S. Environmental Protection Agency funded five academic centers in 1999 to address the uncertainties in exposure, toxicity, and health effects of airborne particulate matter (PM) identified in the “Research Priorities for Airborne Particulate Matter” of the National Research Council (NRC). . . . Data sources and synthesis: The collective publications of the centers served as the data source. To provide a concise synthesis of overall findings, authors representing each of the five centers identified a limited number of topic areas that serve to illustrate the key accomplishments of the PM Centers program, and a consensus statement was developed. **Conclusions: The PM Centers program has effectively applied interdisciplinary research approaches to advance PM science.**”

I have evidence that this paper does not “provide a concise synthesis of overall findings.” For instance, the section “*Life shortening associated with exposure to PM*” (page 170) is quite misleading. The first reference (Zanobetti et al. 2003) deals only with European cities and it provides no evidence that “life shortening” is “associated with exposure to PM.” The second reference (Laden et al. 2006) provides evidence that the relationship in between PM2.5 and total mortality in six Midwestern cities has declined since the 1970s and 1980s and was barely significant in the 1990s. The final two references (Pope et al. 2002 and Pope and Dockery 2006) provide evidence that the relationship PM2.5 and total mortality varies geographically and has weakened substantially over time. **A proper “synthesis of overall findings” should have stated that the current relationship between PM2.5 and mortality is very weak in the United States and may be nonexistent in states like California.**

In addition, UC Irvine Professor Robert F. Phalen published a October 2004 peer-reviewed paper “THE PARTICULATE AIR POLLUTION CONTROVERSY” *Nonlinearity in Biology, Toxicology, and Medicine* 2004;2:259–292 (<http://www.pubmedcentral.nih.gov/picrender.fcgi?artid=2659607&blobtype=pdf>). Quotes from page 289 of this detailed 34-page paper are: “Today, we are at an important crossroad with respect to the future of air-pollutant regulation. One road involves performing the needed research and making decisions on the basis of the science, with full consideration of the many trade-offs associated with new regulations. The other road involves adopting regulations driven by public fear, politics, and pressure groups. The first road is obviously the more beneficial one for protecting human health. . . . The second approach promises uncontrolled, chaotic, and rapidly changing rules. A great deal is at stake. Will science and reason, or expediency, fear, and ignorance, be the determinants of public health decisions?”

Professor Froines has been the Director of the Southern California Particle Center since it was initiated in 1999 with \$11 million in grants to UCLA from US EPA (grant R827352) and CARB (<http://www.scpcs.ucla.edu/news/PRucla11mil.pdf>) (Attachment C). Professor Phalen was an Investigator in the Center during 1999-2005 (<http://www.scpcs.ucla.edu/publications.html>). Both the Froines and Phalen papers received funding from US EPA grant R827352. However, in spite of the claim that the 2009 *EHP* paper gives a “synthesis of overall findings,” the Froines paper does not cite the Phalen paper. I believe that the Phalen paper was not cited because it raises serious and powerful doubts about PM science and regulations associated with PM. Thus, I allege that the 2009 *EHP* paper provides further evidence of falsification by Professor Froines through **omission** of relevant findings.

Finally, Professor Froines participated in the November 30, 2007-December 1, 2007 Impact Project “Moving Forward” Conference, that was co-sponsored and partially funded by three UCLA Centers (<http://www.scribd.com/doc/562980/Impact-Project-Moving-Forward-Agenda>) (Attachment D). Page 5 of the 28-page conference program states that the first objective of the Conference is to “Share research findings from scientific studies on the health effects of air pollution on children, the elderly, workers, and others.” However, based on my examination of the entire program, I believe that this “collaboration of community and university partners” did not accurately present the current PM health effects in Los Angeles and California. Instead, I believe the conference focused on “environmental justice” in response to hyped health effects associated with diesel vehicles used in goods movement throughout Los Angeles and California.

To address my concerns, I want to know if Professor Froines or other participants in “THE LATEST HEALTH RESEARCH FINDINGS” session (page 6) presented any of the epidemiologic evidence showing NO current relationship between PM<sub>2.5</sub> and mortality in California. Also, I want to know if anyone presented data from the CDC WONDER mortality database (<http://wonder.cdc.gov/cmfi-icd10.html>) showing that during 2000-2005 Los Angeles County had an age-adjusted total death rate that was 11% lower than the national rate and lower than the rate in 47 of the 48 continental states (Attachment E). Based on this evidence, I do not see any premature death crisis in Los Angeles County or California. Finally, it strongly appears that US EPA research funds awarded to UCLA may have been used to support advocacy in connection with this conference. My understanding is that Federal research funds cannot be used for advocacy. In summary, I allege that this conference provides further evidence of falsification by Professor Froines and may implicate UCLA in taking an advocacy position on this issue.

Based on his approximately 25-year membership on the CARB Scientific Review Panel, his participation in the 2007 “Moving Forward” conference, his 2008 letter recommending Professor Nichols as CARB Chair (Attachment F), and his 2009 *EHP* paper on the UCLA PM Center (to mention just a few of his efforts) I allege that Professor Froines has engaged in a clear and consistent pattern of falsification regarding PM health effects in California. Furthermore, I strongly believe that if the proper appointment process had been followed and a scientist like Professor Phalen had been Chair of the Scientific Review Panel in 1998, diesel particulate matter would never have been declared a toxic air contaminant and CARB would not have approved the current diesel regulations.

William H. Cormier

June 30, 2009

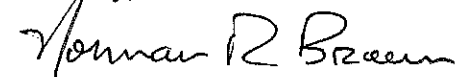
In accordance with the letter and spirit of the *UCLA Policy 993* and the *UC Standards of Ethical Conduct*, I implore you to further examine my allegations against Professor Froines. To help you in this examination, I request that you solicit the expertise of Linda Rosenstock, M.D., who is Dean of the UCLA School of Public Health ([http://www.ph.ucla.edu/about\\_aboutdean.html](http://www.ph.ucla.edu/about_aboutdean.html)). Professor Froines has his primary appointment in this school. I feel compelled to make this request because the actions of Professors Nichols and Froines have severely impacted me and thousands of other businessmen in California through what amounts to falsification of scientific studies. We now are burdened with draconian regulations that are destroying our ability to remain in business in California and that, based on our assessment of the available evidence, are not scientifically justified and are not imposed on businessmen in any other state or country. In the spirit of helping California businessmen survive and hopefully improve the California economy, I trust you will fully evaluate my allegations and the issues they raise.

Finally, in order to make sure that you understand how serious I am about this matter, I sent a detailed June 8, 2009 letter to Governor Arnold Schwarzenegger describing "California Air Resources Board's Part in Our Economic Collapse" (Attachment G). Also, I am the lead petitioner in a lawsuit regarding the CARB Scientific Review Panel, **Brown v. Adams**, which was filed in Sacramento County Superior Court on June 18, 2009 by the Pacific Legal Foundation (PLF). This lawsuit is summarized in a June 18, 2008 PLF news release (<http://community.pacificlegal.org/Page.aspx?pid=934>) (Attachment H). The entire 45-page lawsuit is posted on the PLF website (<http://community.pacificlegal.org/Document.Doc?id=305>). The nine petitioners in this lawsuit represent all affected businesses in California.

I repeat my earlier statement: sunlight is a great disinfectant and I intend to provide the light supported by research from credible and accomplished scientists. As a California businessman whose taxes have been used to fund the US EPA, CARB, and UCLA, I have the right to expect that \$11 million awarded to UCLA has been used to conduct objective research on "the uncertainties in exposure, toxicity, and health effects of airborne particulate matter (PM)." Furthermore, I have the right to expect that the scientist leading this research, Professor Froines, has objectively reported the current health effects of PM in California. I realize that my allegations may create some problems for your fine institution, but it would be a travesty to ignore this very strong evidence of a falsification (knowingly omitting data or results to misrepresent results in the research record) that is resulting in an economic calamity.

Thank you very much for your consideration.

Sincerely,



Norman R. Brown, President

cc: Dean Linda Rosenstock  
School of Public Health  
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Los Angeles, CA 90095-1772

William H. Cormier

June 30, 2009

cc: cont'd

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University of California, Los Angeles  
2147 Murphy Hall  
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## **Alleged Unethical Conduct by UCLA Professor John R. Froines (April 13, 2009 Letter)**

John R. Froines, Ph.D., is Professor in the UCLA School of Public Health ([http://portal.ctrl.ucla.edu/sph/institution/personnel?personnel\\_id=45492](http://portal.ctrl.ucla.edu/sph/institution/personnel?personnel_id=45492)) and UCLA Institute of the Environment ([http://www.ioe.ucla.edu/people/person.asp?Facultystaff\\_ID=75](http://www.ioe.ucla.edu/people/person.asp?Facultystaff_ID=75)), as well as Chair, California Air Resources Board (CARB) Scientific Review Panel (SRP) on Toxic Air Contaminants (TAC) (<http://www.arb.ca.gov/srp/public.htm>). Below are two specific allegations of unethical conduct by Professor Froines. Several hundred pages are needed to fully describe these allegations, but only a few essential pages have been enclosed with this complaint. All of the pages can and should be viewed or printed from the Internet by using the weblinks contained within the text below.

### 1) Allegation of Falsification of Scientific Evidence:

Evidence of falsification is contained in the enclosed June 4, 2008 letter (Attachment I) that Professor Froines wrote to Senator Don Perata recommending California Senate confirmation of Mary D. Nichols as Chair, CARB (<http://www.scientificintegrityinstitute.org/FroinesNichols060408.pdf>). This letter included the enclosed Attachment on diesel particulate matter (PM) and mortality (<http://www.scientificintegrityinstitute.org/FroinesDiesel060408.pdf>). The 23 scientists that Professor Froines cited in the Attachment all agreed with the findings of CARB Staff Report on PM and premature deaths ([http://www.arb.ca.gov/research/health/pm-mort/pm-mort\\_final.pdf](http://www.arb.ca.gov/research/health/pm-mort/pm-mort_final.pdf)). However, his letter and Attachment failed to cite a single dissenting scientist or any of the epidemiologic evidence that clearly indicates there is NO current relationship between PM and mortality in California. His sentence "While there may be a few studies that suggest a lack of evidence for the relationship, the overwhelming evidence suggests the relationship is positive" does not accurately describe the epidemiologic evidence in California. Specific evidence of falsification in the Attachment is given in the enclosed pages of scientific criticism published in the January 2009 California Transportation News "A Regulatory Fraud or a Polluted Process?" (Attachment J) ([http://www.cdtoa.org/old\\_archives/2009/01\\_09/TransNewsLowResProof.pdf](http://www.cdtoa.org/old_archives/2009/01_09/TransNewsLowResProof.pdf), pages 7-9).

Furthermore, Professor Froines failed to mention the extensive, long-term efforts to reverse the August 27, 1998 CARB declaration of diesel PM as a TAC, which was a direct result of his May 27, 1998 diesel TAC letter (<http://www.arb.ca.gov/toxics/dieseltac/combined.pdf>). Professor Froines is well aware of the intense scientific controversy regarding diesel PM because he was named as a defendant in the 1999-2006 lawsuit (Apodaca et al. v. California Air Resources Board et al.) that challenged the diesel PM TAC declaration (<http://www.scientificintegrityinstitute.org/Apodaca021706.pdf>). Also, Professor Froines is well aware that three of the 23 scientists he cited in the Attachment have published key epidemiologic research on PM and mortality that is based on the 1982 American Cancer Society (ACS) Cancer Prevention Study (CPS II) cohort database. These three scientists have refused to facilitate any form of independent reanalysis of the ACS database, in violation of the Federal Data Quality Act. For his Attachment to be objective, Professor Froines should have acknowledged that the evidence used by CARB to establish a relationship between diesel PM and mortality in California has not been independently verified and is still highly disputed, as evident in the 148 pages public comments on this relationship, that were submitted to CARB as of July 11, 2008 CARB ([http://www.arb.ca.gov/research/health/pm-mort/pm-mort\\_supp.pdf](http://www.arb.ca.gov/research/health/pm-mort/pm-mort_supp.pdf)).

2) Allegation of Failure to Follow California Health and Safety Code Section 39670.

Professor Froines has served as the toxicologist on the CARB SRP since at least 1986 and is currently up for reappointment to another three-year term. No other California toxicologist has had an opportunity to serve during this period. This is in violation of the letter and spirit of the California Health and Safety Code Section 39670, which clearly specifies that each SRP member is to be appointed for a term of three years and is to be appointed from a pool of at least three nominees submitted to the appropriate appointing body by the President of the University of California (<http://caselaw.lp.findlaw.com/cacodes/hsc/39670-39671.html>). Indeed, the selection process for all nine SRP members has not followed Code Section 39670. Information from CARB SRP transcripts and other sources indicates that all SRP members have served at least 5 years, 5 members have served at least 12 years, and Professor Froines and one other member have served at least 23 years. One consequence of this pattern of service is that the SRP consists primarily of activist scientists who are NOT representative of the diversity of all California scientists who are qualified to serve on this panel. Furthermore, Professor Froines, who has been SRP Chair since 1998, is well aware of this situation regarding SRP appointments.

Since Professor Froines first began assessing diesel exhaust as a potential TAC for the SRP in 1989, he has been the California scientist most responsible for emphasizing the adverse health effects of diesel PM and for getting it declared a TAC. This TAC declaration is primarily based on weak and controversial epidemiologic relationships between PM and deaths, not on the toxicological evidence that falls within Professor Froines' scientific area of expertise. Most experimental toxicological evidence does not support the health risks of diesel PM found in the epidemiologic studies. Furthermore, other California toxicologists disagree with Froines' assessment of diesel PM toxicity. UC Irvine Professor Robert F. Phalen has described this disagreement in his 2002 book "The Particulate Air Pollution Controversy: A Case Study and Lessons Learned" ([http://www.amazon.com/gp/reader/1402072252/ref=si3\\_rdr\\_ty](http://www.amazon.com/gp/reader/1402072252/ref=si3_rdr_ty)). Professor Phalen has run the UC Irvine Air Pollution Health Effects Laboratory for over 30 years and currently serves on the directly relevant US Environmental Protection Agency (EPA) Clean Air Scientific Advisory Committee Particulate Matter Review Panel (CASAC-PMRC) (<http://yosemite.epa.gov/sab/sabpeople.nsf/WebPeople/PhalenRobert%20F.?OpenDocument>). Furthermore, the 669-page 2002 US EPA "Health Assessment Document for Diesel Engine Exhaust" does not support the CARB finding that diesel exhaust causes premature deaths (<http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=29060>).

This scientific controversy is one key reason why it is important to have appointments to the SRP made in full accordance with Code Section 39670. The fact that CARB diesel regulations costing billions of dollars to implement are a direct result of a SRP TAC determination is an even more important reason why Professor Froines and other SRP members should be required to strictly adhere to all relevant provisions of California Health and Safety Code. Since thousands of California businesses are in danger of extinction because of CARB regulations that do not exist in any other state and that appear to be scientifically unjustified, the above allegations of unethical conduct should be fully and fairly evaluated in a timely manner.



## Particulate Matter (PM) Research Centers (1999–2005) and the Role of Interdisciplinary Center-Based Research

Elinor W. Fanning,<sup>1</sup> John R. Froines,<sup>1</sup> Mark J. Utell,<sup>2</sup> Morton Lippmann,<sup>3</sup> Gunter Oberdörster,<sup>2</sup> Mark Frampton,<sup>2</sup> John Godleski,<sup>4</sup> and Tim V. Larson<sup>5</sup>

<sup>1</sup>Center for Environmental and Occupational Health, School of Public Health, University of California at Los Angeles, Los Angeles, California, USA; <sup>2</sup>University of Rochester Medical Center, Rochester, New York, USA; <sup>3</sup>New York University School of Medicine, New York, New York, USA; <sup>4</sup>Department of Environmental Health, Harvard University School of Public Health, Boston, Massachusetts, USA; <sup>5</sup>Department of Civil and Environmental Engineering, University of Washington, Seattle, Washington, USA

**OBJECTIVE:** The U.S. Environmental Protection Agency funded five academic centers in 1999 to address the uncertainties in exposure, toxicity, and health effects of airborne particulate matter (PM) identified in the "Research Priorities for Airborne Particulate Matter" of the National Research Council (NRC). The centers were structured to promote interdisciplinary approaches to address research priorities of the NRC. In this report, we present selected accomplishments from the first 6 years of the PM Centers, with a focus on the advantages afforded by the interdisciplinary, center-based research approach. The review highlights advances in the area of ultrafine particles and traffic-related health effects as well as cardiovascular and respiratory effects, mechanisms, susceptibility, and PM exposure and characterization issues.

**DATA SOURCES AND SYNTHESIS:** The collective publications of the centers served as the data source. To provide a concise synthesis of overall findings, authors representing each of the five centers identified a limited number of topic areas that serve to illustrate the key accomplishments of the PM Centers program, and a consensus statement was developed.

**CONCLUSIONS:** The PM Centers program has effectively applied interdisciplinary research approaches to advance PM science.

**KEY WORDS:** acute effects, biological mechanisms, chronic effects, criteria pollutants, dosimetry, exposure assessment, morbidity, mortality, particulate matter. *Environ Health Perspect* 117:167–174 (2009). doi:10.1289/ehp.11543 available via <http://dx.doi.org/> [Online 15 September 2008]

The U.S. Environmental Protection Agency (EPA) funded five academic centers in 1999 to address the uncertainties in exposure, toxicity and health effects of airborne particulate matter (PM) identified in the "Research Priorities for Airborne Particulate Matter" of the National Research Council (NRC 1998). Centers were established at Harvard University (Boston, MA), New York University (New York, NY), University of Rochester (Rochester, NY), University of Washington (Seattle, WA), University of California (Irvine, CA), University of California (Los Angeles, CA), and University of Southern California (Los Angeles, CA). All centers were structured to promote interdisciplinary approaches to address the research priorities of the NRC. A midterm report of PM Center findings was published previously (Lippmann et al. 2003). This report highlights selected accomplishments from the first 6 years of the PM Centers, with a focus on the advantages of interdisciplinary, center-based research. A more detailed summary of research findings and bibliography may be found in supplemental material available from the U.S. EPA PM Centers website (U.S. EPA 2008).

### PM Exposure Research Highlights

**Characterization of ambient PM.** The PM Centers worked to characterize ambient PM and the substantial variation of concentration

and composition with source, region, seasonal and diurnal patterns, and size fraction. Examples of these findings follow. In the eastern United States, PM<sub>2.5</sub> (PM with aerodynamic diameter < 2.5 μm) composition varies seasonally, with relatively more sulfate from long-range transport in the winter, and nitrate in the summer. Substantial spatial variability in PM components and copollutants was observed (Maciejczyk and Chen 2005). In the Pacific Northwest, organic carbon (OC) derived from wood burning is a major contributor to fine particle mass (Larson et al. 2006). PM<sub>10</sub> (PM < 10 μm in aerodynamic diameter) collected in Southern California derives largely from road dust and soil and contains significant quantities of metals, whereas PM<sub>2.5</sub> from the same locations contains primarily nitrates, OC, and elemental carbon (EC). Ultrafine PM (UFP; PM < 0.1 μm in aerodynamic diameter) is especially high in OC (Sardar et al. 2005). Semivolatile components of PM have received increased attention in recent investigations, especially with regard to combustion-derived UFP in which a significant fraction of emissions by mass can consist of semivolatile material that has condensed onto a nonvolatile, primarily carbon core (Kuhn et al. 2005a; Robinson et al. 2007). Atmospheric processes generate UFP in regions of the Los Angeles, California, air basin that receive advected pollutant air masses (Fine et al. 2004; Singh et al.

2006). The role of atmospheric chemistry in formation of UFP is important: photo-oxidation of diesel emissions rapidly generates organic PM (Ntziachristos et al. 2007).

**Source apportionment.** Research on sources emphasized mobile sources/traffic during the first 6 years of the PM Centers (see below). A workshop was held by the PM Centers to compare different methods for source apportionment of PM. The outcomes of different analytical methods found good agreement across different investigators and methods in apportioning sources of PM<sub>2.5</sub> mass in two U.S. cities: Phoenix, Arizona, and Washington, D.C. (Hopke et al. 2006; Thurston et al. 2005). Center research also included identification of tracer compounds for use in identifying sources of ambient particles (Fine et al. 2004).

**Personal exposure.** A significant body of data on personal exposure resulted from field studies of the PM Centers, including longitudinal studies conducted in different airsheds, populations, and housing. Extensive intrapersonal and interpersonal variability in the ratio of personal to ambient exposure measures was observed in some studies (Liu et al. 2003), but taken collectively the data establish that ambient air concentrations at central site monitors can yield valid estimates of average personal exposure for population-based epidemiologic studies (Sarnat et al. 2000, 2002). The location of central site monitors, extent of PM penetration into indoor environments, personal activities, and the influence of

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Progress reports and citations to additional PM Center publications are available on the U.S. Environmental Protection Agency (U.S. EPA) Web site at <http://es.epa.gov/ncer/science/pm/centers.html>

The authors applaud the efforts of all PM Center researchers and the U.S. EPA for continued support of this critical research area. U.S. EPA program officers S. Katz and G. Robarge were invaluable in coordinating the preparation of this manuscript.

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The authors declare they have no competing financial interests.

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indoor PM sources can affect personal/ambient exposure ratios (Larson et al. 2004; Sarnat et al. 2006). The effects of these factors differ with PM size and composition; for example, freeway-derived UFP in the 70- to 100-nm range penetrated indoors to a greater extent than 10- to 20-nm PM (Zhu et al. 2005). The relationship of ambient criteria pollutant concentrations to ambient and personal PM<sub>2.5</sub> was explored. Ambient criteria pollutant levels were better predictors of personal PM<sub>2.5</sub> than they were of personal exposure to the gaseous species themselves, suggesting that the criteria pollutants may be useful as surrogates of PM<sub>2.5</sub> exposure, but are unlikely to act as confounders in epidemiologic studies (Sarnat et al. 2005). In a study of ambient UFP, hourly and 24-hr number concentrations were not significantly associated with concentrations of gaseous copollutants (Sardar et al. 2004).

### PM Health Effects and Mechanisms of Injury Highlights

During the effort of the U.S. EPA to establish a national ambient air quality standard for fine particles, considerable questions about the biological plausibility of epidemiologic findings on hospitalization and mortality from cardiopulmonary effects arose. As a result the NRC committee recommended research into the mechanisms of injury that underlie PM health effects, especially daily mortality. Developments in defining toxicologic

mechanisms and intermediate clinical conditions that may explain the observed cardiovascular mortality are one of the highest impact areas of the scientific contributions of the PM Centers, in particular by addressing PM size-specific research, for example, ultrafine, fine, and coarse PM.

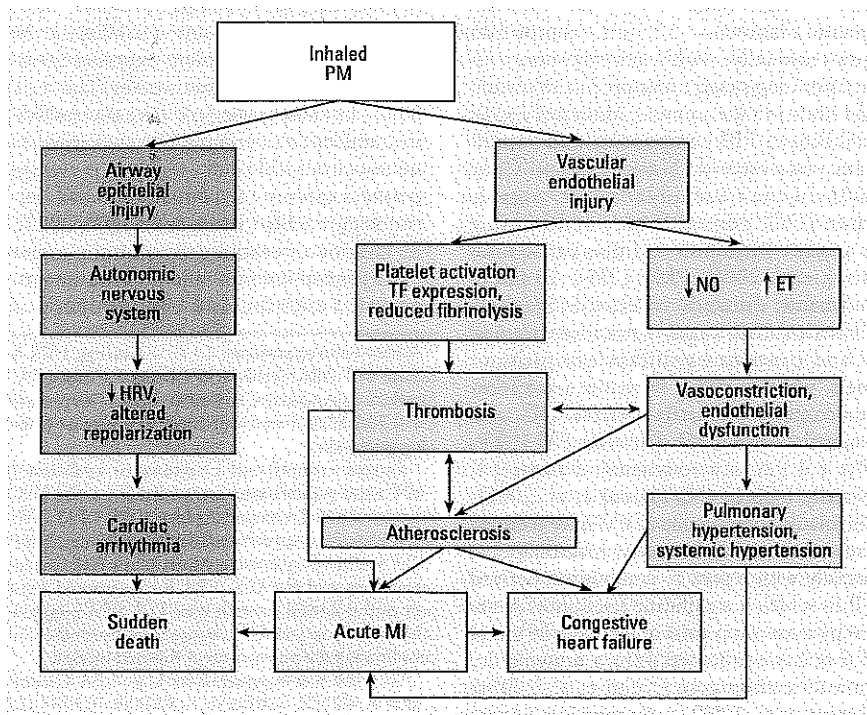
#### PM effects on the cardiovascular system.

The PM Centers convened a workshop to discuss potential mechanisms of PM-associated cardiovascular effects and to identify fruitful research approaches [Frampton et al. 2009 (in press; Utell et al. 2002)] (Figure 1). During the first 6 years, center investigators have contributed to several review papers on cardiovascular responses to inhaled UFP and PM<sub>2.5</sub> (Brook et al. 2004; Delfino et al. 2005; Godleski 2006; Mar et al. 2006; Pope and Dockery 2006). New statistical methodology was developed and applied to strengthen the interpretation of acute mortality studies (Coull et al. 2001; Janes et al. 2005; Schwartz and Coull 2003; Zanobetti et al. 2000, 2001; Zeka and Schwartz 2004). Epidemiologic studies that focused on specific cardiovascular outcomes, such as myocardial infarction (Peters et al. 2001, 2004; Zanobetti and Schwartz 2005) or cause-specific mortality (Franklin et al. 2007; Miller et al. 2007; Pope et al. 2002; Zeka et al. 2005) produced hypotheses for testing in laboratory animal research and human clinical studies. Toxicologists have contributed by identifying cellular and biomolecular mechanisms involved in the cardiovascular

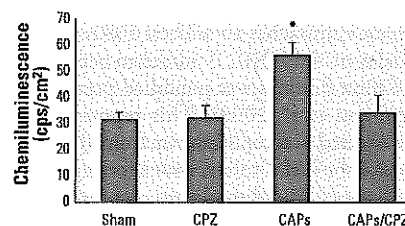
effects that result from acute and long-term exposures to ambient PM (Araujo et al. 2008; Corey et al. 2006; Lippmann et al. 2005a, 2006; Sun et al. 2005). Most recently, toxicologic studies (Ghelfi et al. 2008) have shown that increases in reactive oxygen species (ROS) in the heart associated with inhalation of concentrated ambient particles (CAPs) may be abrogated by blocking neural receptors in the lung (Figure 2).

Investigations in the PM Centers and elsewhere supported the hypothesis that inflammatory responses contribute to cardiovascular toxicity. Possible mechanisms were proposed. Pulmonary inflammation could release ROS, cytokines, and chemokines from the lung to the systemic circulation (Frampton et al. 2006b). Vascular inflammatory markers were associated with PM<sub>2.5</sub> exposure in a subchronic mouse study (Sun et al. 2005). Gong et al. (2007), which demonstrated that both diesel extract and oxidized lipid components synergistically affect the expression profile of several gene modules related to vascular inflammatory processes. Evidence for an increase in C-reactive protein and a shift to a procoagulatory state of the blood was seen in coronary artery disease patients exposed to various size fractions of PM (Rückerl et al. 2006). Temporal and other parameters differed with the specific air pollution mixture in this study, which limited interpretation. Pope et al. (2004) concluded that fine particulate air pollution is a risk for cause-specific cardiovascular disease mortality via inflammation, accelerated atherosclerosis, and altered autonomic function. Zeka et al. (2006) reached similar conclusions. Their epidemiologic study supports the hypothesis that particles can induce cardiovascular disease through inflammatory pathways and suggests greater toxicity of traffic-related particles.

Autonomic function effects manifested as alterations in heart rate and heart rate variability (HRV) have been associated with PM<sub>2.5</sub> exposure. Decreased HRV was associated with



**Figure 1.** Mechanistic pathways for PM cardiovascular effects. Abbreviations: ET, endothelin; MI, myocardial infarction; NO, nitric oxide; TF, tissue factor. Modified from Frampton et al. 2009 (in press) with permission from Wolters Kluwer.



**Figure 2.** Capsazepine (CPZ) aerosolization prevents oxidative stress and damage in the heart of rats exposed to CAPs. Adult Sprague-Dawley rats received aerosols containing either 500 μM CPZ or saline for 20 min immediately prior to exposure to CAPs. Values represent the mean of eight independent determinations ± SEM. Reproduced from Ghelfi et al. (2008) with permission from Society of Toxicology. \*p < 0.05.

PM<sub>2.5</sub> exposure in panel studies of elderly subjects (Adar et al. 2007; Henneberger et al. 2005; Schwartz et al. 2005a). No associations with altered heart rate or HRV were seen in Seattle during the winter woodburning season (Mar et al. 2005b; Sullivan et al. 2005). A population-based study that drew on an established cohort (the Normative Aging Study) confirmed the association between decreased HRV and PM<sub>2.5</sub> seen in other studies; history of ischemic heart disease, hypertension, and diabetes modified the effects of PM<sub>2.5</sub> (Park et al. 2005). Cardiac arrhythmias and vascular changes such as endothelial cell responses and alterations in blood pressure are other important clinical signs of cardiovascular toxicity that have been identified in both humans and animals exposed to PM (Frampton et al. 2006b; Gong et al. 2004; Nadziejko et al. 2002).

Atherosclerosis is emerging as an important toxic end point of PM<sub>2.5</sub> exposure. Atherosclerosis findings may be related to reports of myocardial infarction associated with PM<sub>2.5</sub> in epidemiologic studies (Peters et al. 2004; Zanobetti and Schwartz 2005). The Peters study relates traffic exposures and myocardial infarction. Atherosclerotic lesions in a susceptible mouse model were enhanced by PM<sub>2.5</sub> exposure in a number of reports (Araujo et al. 2008; Chen and Hwang 2005; Chen and Nadziejko 2005; Lippmann et al. 2005b; Sun et al. 2005). Araujo et al. (2008) compared the proatherogenic effects of ambient UFP with PM<sub>2.5</sub> in apolipoprotein E-deficient mice. UFP-exposed mice exhibited significantly larger atherosclerotic lesions than mice exposed to PM<sub>2.5</sub> or filtered air (Figure 3).

**Respiratory effects of PM exposure.** PM Centers research has added to a wide body of literature investigating toxicologic mechanisms and effects of PM in the respiratory system. Overall, the issue of respiratory effects and PM exposure has been reviewed recently with reference to work produced by the PM Centers as well as others (Boothe and Shendell 2008; Salam et al. 2008). Salam focuses on asthma, whereas the Boothe and Shendell paper addresses some other end points in addition to respiratory effects. Results from clinical and panel studies in asthmatic and elderly subjects, as well as experimental studies in animals and *in vitro* cellular systems with relevance to respiratory tissues were reported. The discovery that UFP deposition is increased in asthmatic subjects during exercise has important implications for defining populations at greater risk of PM-related effects (Chalupa et al. 2004; Daigle et al. 2003). Adjuvant effects of ambient PM in promoting allergic airways responses occurred in a sensitized mouse model (Kleinman et al. 2005). Acute exposures to ambient PM in Seattle were associated with increased inflammation in asthmatic subjects, as measured by exhaled nitric

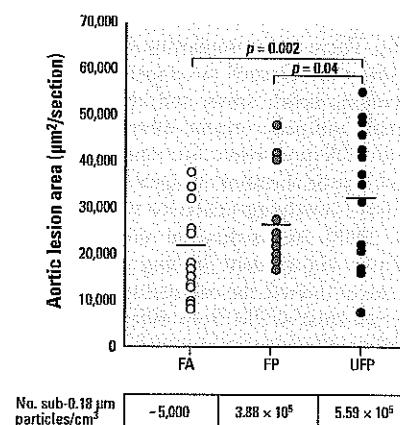
oxide (Jansen et al. 2005; Koenig et al. 2005; Mar et al. 2005a). Respiratory effects in children were also a focus. Increased risk of infant hospitalization for bronchiolitis was significantly associated with subchronic and chronic exposures to PM in Los Angeles (Karr et al. 2007), where exposures in the month prior to hospitalization (subchronic) and mean lifetime exposure (chronic) referenced to the case diagnosis date were assessed on the basis of data derived from the California Air Resources Board. Epidemiologic studies that linked the PM Centers and the Children's Health Study (CHS) contributed findings that identify infants and children as important populations of concern for respiratory effects of PM (Gauderman et al. 2004, 2005, 2007; Molitor et al. 2007; Trenga et al. 2006). These studies demonstrate that exposure to PM<sub>2.5</sub> and other air pollutants were associated with reduced lung function growth in children and provided evidence for compromised lung function. The CHS/PM Center studies identified traffic as a risk factor (Gauderman et al. 2004, 2005, 2007; McConnell et al. 2006).

**Identification of new target tissues.** UFP of carbon-13 were detected in the olfactory bulbs of rats after inhalation exposure (Oberdörster et al. 2004), suggesting that the central nervous system is a potentially important toxicologic target of PM<sub>2.5</sub> (Figure 4). In support of this significant result, studies of mice chronically exposed to ambient PM<sub>2.5</sub> documented loss of brain neurons (Veronesi et al. 2005) and changes in gene expression in the brain consistent with inflammatory effects (Gunnison and Chen 2005). In another study, proinflammatory cytokines were increased in brains of mice exposed to concentrated PM<sub>2.5</sub> compared with those of control animals (Campbell et al. 2005).

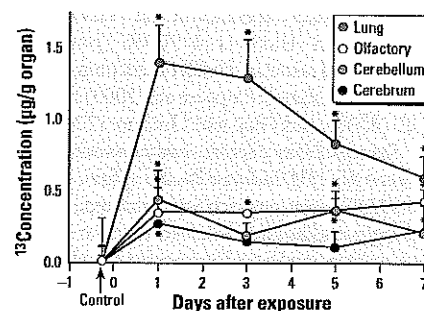
**Chemical mechanisms of PM toxicity.** To better identify the most toxic PM components and sources, the PM Centers have pursued experimental linkages between toxicologic properties and specific physical/chemical characteristics of particles including size, surface area, and PM components such as transition metals, endotoxin, and organics including reactive organic compounds. Multiple chemical and biological mechanisms by which PM can induce toxic effects in a variety of target cell types have been proposed (Frampton 2006; Yang et al. 2008). Oxidative stress, a common effect of toxicant exposure, is a change in the redox environment of the cell (Schafer and Buettner 2001) through changes in the ratios of concentrations of oxidized to reduced cellular antioxidants. Oxidative stress occurs by increasing intracellular ROS or by depleting glutathione (GSH). GSH is the predominant antioxidant in cells and plays important roles in protecting against oxidative and electrophile stress (Rahman and MacNee 2000). A number

of PM Center studies during the first 6 years contributed to what is now a strong evidentiary basis for oxidative damage as a general toxicologic mechanism of PM injury (Delfino et al. 2005; Ghelfi et al. 2008; González-Flecha 2004; Gurgueira et al. 2002; Li et al. 2003a, 2003b; Rhoden et al. 2004, 2005; Tao et al. 2003; Xia et al. 2006). There is widespread agreement throughout the PM Centers that oxidative stress may be a mechanism of major importance for cardiorespiratory effects.

Studies of reactive chemical components of ambient PM samples reported that particles possess intrinsic chemical reactivity



**Figure 3.** UFP is the most proatherogenic fraction. Atherosclerotic lesions were quantitatively analyzed in serial aortic root sections and stained with oil red O. Lesional area was scored as square micrometers per section and averaged  $\geq 25$  sections per animal. Group averages are indicated by straight horizontal bars. One mouse exposed to filtered air (FA) was an obvious outlier in its group and was removed from the atherosclerotic lesion analysis. However, its inclusion did not modify the overall significance. Mice exposed to FA are represented by white circles ( $n = 14$ ), fine particles (FP) by blue circles ( $n = 16$ ), and UFPs by black circles ( $n = 15$ ). Reproduced from Araujo et al. (2008) with permission from Wolters Kluwer.



**Figure 4.** Time course of <sup>13</sup>C tissue concentrations in lung, olfactory bulb, cerebellum, and cerebrum of rats after a 6-hr inhalation exposure to ultrafine (36 nm count median diameter) elemental <sup>13</sup>C particles ( $n = 3$  rats per time point). Adapted from Oberdörster et al. (2004) with permission from Taylor and Francis. \* $p < 0.05$  (ANOVA).

that may play an important role in toxicity (Cho et al. 2005; Venkatchari et al. 2005). Covalent modification of biological molecules by reactive electrophilic compounds, particularly organics, and ROS production are two key chemical mechanisms by which PM can disrupt intracellular biochemistry, ultimately altering gene expression and subcellular organelle function in target cells. Center investigators demonstrated covalent binding of a cellular enzyme by electrophilic agents, including organic compounds, present in ambient PM (Rodriguez et al. 2005; Samet et al. 1999) and reported that PM can directly inhibit the activity of enzymes involved in oxidative stress response in a cell-free assay (Hatzis et al. 2006). There is accumulating evidence that transition metals such as copper, vanadium, chromium, nickel, cobalt, and iron, as well as aromatic and polar organic substances, play a role in ROS production. An important role of metals may be alteration of signal transduction pathways involving oxidative stress (Samet et al. 2003). Assays that can screen for both oxidative and covalent binding properties of PM are of interest for comparing the toxicologic potential of PM from different sources, locations of interest, season, and other parameters of interest (Borm et al. 2007).

**Life shortening associated with exposure to PM.** In analyses at the Harvard Center in which daily deaths in 10 European cities were investigated by examining all-cause, respiratory, and cardiovascular deaths for all ages and stratifying by age groups, it was found that the effect of air pollution is not limited to advancing mortality by a few weeks, but that effects persist for over a month after exposure. The short-term mortality effect size estimate for PM<sub>10</sub> doubles when longer-term effects for all mortality and cardiovascular mortality are considered and becomes five times higher for respiratory mortality (Zanobetti et al. 2003). Reduction of ambient air pollution levels was associated with reduced total, cardiovascular, and lung cancer mortality in the Harvard Six Cities Cohort (Laden et al. 2006). Long-term exposure was associated with excess lung cancer in cohort studies of Pope et al. (2002), Laden et al. (2006), and Pope and Dockery (2006).

**Susceptibility factors and populations of concern for PM-induced health effects.** When the PM Centers research was initiated, epidemiologic studies had indicated that the elderly and people with cardiovascular or chronic lung disease were at greater risk for morbidity and mortality associated with acute PM exposure. The PM Centers explored the basis for this susceptibility and also produced research findings that expand the spectrum of populations of concern. Support for the epidemiologic observations that elderly and chronic obstructive pulmonary disease patients have higher rates of hospitalization and mortality

associated with acute PM exposure has come from human clinical studies showing that elderly people experience greater effects of PM on HRV and blood parameters (Park et al. 2005; Pope and Dockery 2006; Schwartz et al. 2005a, 2005b). Further support for the elderly as a population of concern comes from studies of geriatric laboratory animals (Elder et al. 2004a, 2004b).

A study of PM-related daily mortality found greater effects in diabetic subjects (Zeka et al. 2006). The increase in mortality in diabetics may be related to increased susceptibility to the cardiovascular effects of PM exposure, as indicated by greater rate of hospitalization for heart disease (Zanobetti and Schwartz 2002), sensitivity to changes in HRV (Park et al. 2005), and altered vasomotor function (O'Neill et al. 2005) in diabetic subjects. It is possible that these patients may be more susceptible to inflammatory effects of PM, which in turn affect vascular tissues (O'Neill et al. 2007). In contrast, recent results from the Women's Health Initiative suggest that diabetics in this cohort were not at increased risk (Miller et al. 2007). More work on this subject is needed, and controlled human exposures in diabetic studies have been initiated by the PM Centers (Frampton et al. 2006a). Schwartz et al. (2005b) reported an association between presence or absence of the allele for glutathione-S-transferase M1 and the high frequency component of HRV. Genetic susceptibility is an area in which the PM Centers are currently increasing research focus.

### Advances in Critical Interdisciplinary Research Areas

Interdisciplinary research has been a hallmark of the PM Centers since their inception. Two subject areas that were exemplary in terms of bringing together multiple investigative perspectives were investigations of UFP and mobile sources.

**Ultrafine particles: unique in composition and toxicity.** Center-based research allowed a major effort to characterize size distributions, chemical speciation, and the effect of atmospheric processes of UFP to be integrated with toxicologic research (Donaldson and Stone 2003). UFP in urban airsheds are largely derived from fresh combustion sources, although secondary formation of UFP from atmospheric photochemical processes is also an important source (Sioutas et al. 2005). UFP freshly generated by combustion are short-lived and subsequently grow to form aggregates. UFP dominate particle number concentration in ambient PM samples while contributing little to PM mass concentrations. In part because of a complex fractal structure (Friedlander and Xiong 2000), UFP possess much greater surface area per unit mass than larger ambient particles. The large surface

area, in turn, allows greater per-mass concentrations of adsorbed or condensed toxic air pollutants (oxidant gases, organic compounds, transition metals) to collect on UFP (Sioutas et al. 2005). Studies on ambient and model particles have concluded that the large specific surface area of UFP may be a key component in their toxicology (Oberdörster 2001).

The PM Centers produced an integrated body of exposure and toxicologic studies on ambient and model UFP as well as studies of controlled human exposures. Dosimetry work showed that UFP will have significant accumulation in the lung (Kreyling et al. 2006). In addition, UFP of varying composition can cross cellular membranes by diffusion (Geiser et al. 2005) and gain access to vulnerable targets within cells. The potential for translocation from the site of lung deposition into systemic circulation, although rates have been low with test particles (Kreyling et al. 2002), could have major mechanistic implications (Elder and Oberdörster 2006). Electron microscopy indicated subcellular penetration and mitochondrial damage by UFP in *in vivo* studies and, to a lesser extent, by fine particles (Li et al. 2003b). Disruption of mitochondrial functions may play an important role in PM-mediated health effects (Xia et al. 2007).

In a study of size-segregated concentrated ambient PM samples, the ability of PM to catalyze ROS generation, an initial step in the induction of oxidative stress, was greatest in the UFP fraction (Cho et al. 2005). Li et al. (2003a) summarized contrasting features of coarse, fine, and ultrafine particles from Southern California, including relevant chemical and biological parameters. The toxicologic findings correlated with PM OC and polycyclic aromatic hydrocarbon (PAH) composition, suggesting a role of organic agents in generating redox activity (Table 1).

The PM Centers conducted controlled human exposure studies with UFP. Results from these studies were limited, because of small group sizes and because these exposures are necessarily brief and conducted at low concentrations compared with the background PM exposures that may be experienced by urban study subjects. In the first set of studies, short-term exposures were conducted with 10–50 µg/m<sup>3</sup> carbon UFP generated in the laboratory. Alterations in blood cell adhesion molecules and in a marker of vascular perfusion suggest that UFP exposure may produce subtle changes in pulmonary vasoconstriction (Frampton 2007; Pietropaoli et al. 2004). A small but statistically significant reduction in arterial oxygen saturation and some evidence for reduced HRV were found, although the small study size limited interpretation (Gong et al. 2008). An expanded focus on UFP in epidemiologic studies is needed but has been limited to date by the challenges of assessing exposure to UFP.

*Traffic: mobile sources are highly relevant to the public health impacts of PM.* The center-based research context was particularly useful in advancing the science on mobile sources of PM, the focus of an extensive international research effort. Numerous investigations of the physical and chemical attributes of PM collected alongside freeways and in roadway tunnels were performed. The results have yielded data on size distribution, number and mass concentrations, chemical speciation, emissions factors, volatility, penetration indoors, and the impact of atmospheric processes on roadway PM (Biswas et al. 2007; Fine et al. 2004; Geller et al. 2006; Kuhn et al. 2005b, 2005c; Phuleria et al. 2007; Sardar et al. 2005; Zhu et al. 2005). Detailed spatial profiles of UFP concentration at varying distances from freeways were generated (Zhu et al. 2002a, 2002b). Concentrations of UFP drop exponentially with distance from the center of the freeway, reaching upwind levels at approximately 300 meters. The size distribution of UFP also changed markedly with distance reflective of coagulation and other atmospheric particle processes. Winter particle number concentrations are greater than summer, indicating formation of UFP from vapor condensation. Exposure to motor vehicle exhaust emissions during commuting may constitute a substantial fraction of daily personal PM exposure, especially to UFP (Sioutas et al. 2005; Zhu et al. 2007).

Toxicologic studies of traffic-derived aerosols studied by PM Centers included *in vitro* findings that implicate PM collected in freeway microenvironments in the production of reactive chemical species, stimulation of proinflammatory effects, and altered gene expression in cellular test systems. UFP fraction, carbonaceous content, and an organic tracer for vehicles were linked with toxicologic activity of PM in a variety of assays (Cho et al. 2005; Li et al. 2003a, 2003b). Several studies of laboratory animals exposed to PM on or near busy roadways have identified cardiovascular and allergic airways effects (Elder et al. 2004b, 2007; Kleinman et al. 2005). Evidence that traffic-derived air pollution affects humans has expanded significantly during the first 6 years of PM Centers funding, implicating mobile source in respiratory effects in children (Gauderman et al. 2004, 2005, 2007; McConnell et al. 2006), cardiovascular effects (Riediker et al. 2004) including myocardial infarction (Peters et al. 2004; Tonne et al. 2007), and low birth weight (Wilhelm and Ritz 2003). Toxicologic studies are needed to follow up the epidemiologic findings of effects on the fetus. In a reanalysis of data from the Harvard Six Cities study of daily mortality and PM, source apportionment approaches identified the mobile source factor as most strongly associated with increased daily mortality (Laden et al. 2000).

## Policy Implications of PM Centers Research

Research findings from the PM Centers have had a significant influence on science policy, most directly in terms of the science that underlies the National Ambient Air Quality Standards (NAAQS) for PM. The findings of morbidity and mortality that form the scientific basis for the short-term and annual PM NAAQS were strengthened through epidemiologic and statistical research. Mechanistic investigations and studies of preclinical markers established biological plausibility for observed relationships between ambient air PM and observed acute mortality. In personal exposure studies, validation of the use of central site ambient concentrations provided crucial support to the interpretation of epidemiologic results.

The PM NAAQS are based on mass concentration. The state of the science suggests that no single parameter, whether mass, size fraction, surface area, or a particular chemical component, is responsible for all the diverse mechanisms and toxicologic end points that have been associated with PM, and a more sophisticated approach to standards will be needed. Based on findings from the PM Centers and others, the potential efficacy of number and component based standards should be assessed. As more data become available to link specific PM emissions sources, chemical composition, and physical characteristics with quantitative measures of toxicity, the question of source-specific control strategies to maximize public health protection also needs to be considered.

The increasing level of evidence that UFP are toxic but may not be controlled well by existing regulatory approaches raises other policy issues including mitigation of the risk of health effects associated with housing, schools, parks, and other heavily populated public facilities located near heavily traveled roadways, busy seaports, and other combustion sources that are the major urban sources of exposure to UFP. There are potential environmental justice concerns associated with transportation-derived combustion, as it is often areas of lower socioeconomic status that are most affected by proximity to these sources.

## Looking Forward: Research Priorities and Current Directions

As the PM Centers program moved forward into the second phase, the original guiding research priorities were reevaluated, and new priorities have emerged. Several areas of investigation identified during the development of the 1997 PM NAAQS are still of critical relevance today, but the scientific questions being asked have been refined. Some research topics being pursued in the current round of PM Centers are described below.

*Particle source characterization and PM components as factors in PM toxicity.* The PM Centers current research agenda includes detailed studies of the physical and chemical attributes of ambient PM associated with specific sources. The current science indicates that multiple mechanisms of injury, in backgrounds modified by host susceptibility factors, can be activated by a variety of PM components and characteristics. To address the complexity associated with assessing the health effects associated with specific PM components, the current PM Centers research agenda compares toxicologic properties of PM by source type in addition to compositional attributes. Mobile sources continue to be a priority focus, and there is a need to better understand the fate of fossil fuel combustion emissions from a variety of mobile and stationary sources, including airports, seaports, and other sources as well as roadways. Building upon the productive body of work on mobile source PM in the first 6 years of PM Center work, the current PM Centers include human panel and clinical studies and toxicologic studies in laboratory animals and *in vitro* systems that test hypotheses about the effects of mobile source PM exposures. Source apportionment efforts are ongoing as well, to build on previous work that found mobile sources are dominant contributors to urban UFP loads. *In vitro* studies will pay particular attention to UFP, organic compounds, and transition metals. UFP formed from nucleation of ambient air vapors are a new focus, as they may be especially toxic.

*Dosimetry and toxicokinetics.* Research at the PM Centers is addressing particle deposition, uptake, distribution, and fate, including

**Table 1.** Contrasting features of coarse, fine, and ultrafine particles.

Parameters	Coarse PM <sub>10</sub>	Fine PM <sub>10</sub>	Ultrafine PM <sub>10</sub>
Size (µm)	2.5–10	2.5–0.15	<0.15
OC content	+	++	+++
EC content	+	++	+++
Metals (% of total elements)	+++	++	+
PAH content	+	+	+++
Redox activity (DTT assay)	+	++	+++
HO-1 induction	+	++	+++
GSH depletion	+	+++	+++
Mitochondrial damage	None	Some	Extensive

Data from Li et al. (2003a).

the effects of developmental stage on disposition of PM. Cell culture systems with gene expression and proteomics methods are being used for studies of metabolic and genetic responses that will be useful for toxicokinetics. Studies of the dosimetry and toxicokinetics associated with UFP are especially important, given previous PM Centers findings that these particles distribute into systemic circulation and secondary target organs such as the CNS, and can enter cells and subcellular organelles.

**Mechanisms.** All the current PM Centers have a strong focus on continuing to develop understanding of the toxic mechanisms that underlie clinically and epidemiologically defined adverse health effects of PM. Mechanisms being pursued include reactive chemical species that cause cellular oxidative stress responses. In the first 6 years, studies of oxidative damage associated with PM were performed using diverse chemical species, cell culture experiments, and laboratory animal studies. Evolving from that work, the current PM Centers studies are looking at markers of oxidative stress processes in humans and a range of clinical and preclinical biomarkers. The list of gene products that can be used as indicators of PM exposure or toxicity in various cell types has expanded. Mechanistic hypotheses are being tested in panel and other epidemiologic studies.

**Susceptibility.** Susceptibility is a major theme, drawing on the work from the earlier center and noncenter investigators showing that individuals with pulmonary and cardiac health conditions, elderly, children, diabetics, and others may be more susceptible to the adverse effects of PM exposure than the general population. The PM Centers are looking at early life exposures to PM in animal models, performing panel studies of elderly subjects or subjects with compromised health status, using a large established cohort to identify how risk factors for PM-related health outcomes may be modified by individual factors such as medication use, diet, and genotype. Compromised animal models are a key theme of current research into susceptibility. PM exposure studies on ApoE<sup>-/-</sup> mice (an atherosclerosis-prone model), hypertensive rats, and diabetic rats are all planned or underway.

## Conclusions

In 1998, a committee of the NRC published the first of a four-volume report titled "Research Priorities for Airborne Particulate Matter" that identified the 10 highest-priority targets for PM research (NRC 1998). Within the research portfolio of the PM Centers, the priority areas have been addressed. A subsequent NRC report (2001) emphasized that these research priorities require multidisciplinary approaches. Recognizing that progress in understanding the health effects consequent

to air pollution exposure requires talents from highly divergent fields, we believe that the PM Centers effectively promote interdisciplinary cross-fertilization. The next 5 years of this program will bring the experience and results of the first centers to fruition in new, focused studies that we hope will be instrumental in addressing the difficult scientific and public health policy problems that arise from ubiquitous particulate air pollution.

## CORRECTION

In the title of the manuscript originally published online, the date range in the title was incorrect. It has been corrected here.

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# **UCLA Researchers Will Lead \$11 Million, Five-Year Study of Particulate Air Pollution in South Coast Air Basin**

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For Immediate Release - June 22, 1999

Researchers from the UCLA Institute of the Environment and the School of Public Health have received \$11.2 million in state and federal grants to create a multi-university center for studying air pollution caused by tiny particulate matter in the Los Angeles area.

The Southern California Center for Airborne Particulate Matter (SCCAPM) will better determine the sources of particulate pollution, probe the chemical nature of particles and investigate the health effects of breathing particulates. Particles are microscopic dust created by combustion of fuels, erosion from automobile tires, industrial releases, natural phenomena such as fires and wind, and many other means.

Funded by an \$8.7 million grant from the U.S. Environmental Protection Agency and a \$2.5 million grant from the California Air Resources Board, the center will take part in a national effort to better define and understand air pollution caused by particulate matter.

"This study will not only have major implications for the South Coast Air Basin, but for air pollution policy on the national and international level as well," said center director John Froines, a UCLA School of Public Health toxicologist who heads the 30-person research effort. "This region has one of the best collections of air pollution scientists in the country and this is the first time we have all collaborated together on a project of this magnitude." U.S. Senator Barbara Boxer (D-CA), who strongly supported UCLA's application for EPA funding, said, "This is great news for UCLA and for Southern California. Particulate air pollution is hazardous to the health of everyone in the Los Angeles air basin, especially children. With EPA's assistance the Southern California Center for Airborne Particulate Matter will enhance our ability to understand particulate pollution and protect public health."

Particulate matter is one of the worst air pollution problems in the four-county South Coast Air Basin. Research has shown that breathing the tiny particles can increase asthma attacks and cause childhood respiratory problems. Particulate pollution is blamed for the premature deaths of thousands of Americans every year.

In addition to involving 16 researchers at UCLA, the study will include researchers from the University of Southern California, the University of California, Riverside, the University of California, Irvine, the California Institute of Technology and Rancho Los Amigos Medical Center.

A key component will be construction of a transportable exposure facility to study how exposure to different types of particulate pollution affects the public health. The one-of-a-kind

"concentrator" will allow researchers to conduct exposure studies using samples of particulates actually collected from the region's air, rather than created in a laboratory.

The concentrator, supported by the California Air Resources Board grant, will be the only one in the world capable of isolating ultrafine and coarse particulate matter. The equipment will be built through a collaboration of scientists and engineers at UCLA and USC.

"This equipment will allow us to investigate the health effects of particulates using a realistic sample of the air people breathe in the Los Angeles region, which has a broad array of chemical contaminants," Froines said.

Particulates in the South Coast Air Basin include organic compounds from fuel combustion, heavy metals created by erosion and materials called bioaerosols such as pollen and fungi. By applying the new tools, researchers hope to learn something about the relative health hazards posed by the different pollutants.

"We know that particulate air pollution causes health problems," Froines said. "But we don't know much about the relative health risks posed by the different chemical components that make up particulate pollution. This center will seek to examine that issue."

The particulate project will be done in association with the University of Southern California's Children's Health Study, which is following 3,600 school children in 12 local communities to study the chronic health effects caused by air pollution. Preliminary results from that study suggest a relationship between particulate pollution and chronic respiratory problems.

The Southern California Center for Airborne Particulate Matter is one of five particulate research centers awarded grants as part of an EPA effort to learn more about the health problems caused by exposure to particle pollution.

Other institutions receiving EPA grants are the University of Rochester, the University of Washington, New York University School of Medicine and the Harvard School of Public Health.

-UCLA-



# Conference Program 2007



## *"Moving Forward"*

*A conference on healthy solutions for communities impacted by trade, ports and goods movement*



**Organized by the Trade, Health & Environment Impact Project,  
A collaboration of community and university partners**

Center for Community Action and Environmental Justice (CCA EJ)  
Coalition for a Safe Environment (CEASE)  
East Yard Communities for Environmental Justice (EYCEJ)  
Long Beach Alliance for Children with Asthma (LBACA)  
Outreach Program of the Southern California Environmental Health Sciences Center (USC/UCLA)  
Urban & Environmental Policy Institute (Occidental College)

**Friday, November 30 and Saturday, December 1, 2007**

Carson Community Center: 801 East Carson Street, Carson, CA 90745



**Trade, Health & Environment Impact Project**

E-mail: [info@theimpactproject.org](mailto:info@theimpactproject.org)  
Visit us online at [www.theimpactproject.org](http://www.theimpactproject.org)

### **Key Conference Sponsors**

The California Endowment  
Southern California Environmental Health Sciences Center (USC/UCLA),  
funded by National Institute of Environmental Health Sciences (NIEHS)  
Children's Environmental Health Center (USC/UCLA),  
funded by NIEHS and U.S. EPA  
Center for Occupational and Environmental Health (UCLA)  
William and Flora Hewlett Foundation  
South Coast Air Quality Management District  
Panta Rhea Foundation

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## **Trade, Health & Environment Impact Project**



The Trade, Health & Environment Impact Project (THE Impact Project) is a collaboration of community and university partners focused on reducing the impacts of trade, ports and goods movement activities on health and community life. The collaborative is funded by The California Endowment.

### **THE Impact Project partners include:**

- Center for Community Action and Environmental Justice (Riverside and San Bernardino)
- Coalition for a Safe Environment (Wilmington and Harbor area)
- East Yard Communities for Environmental Justice (Commerce and East L.A. area)
- Long Beach Alliance for Children with Asthma (Long Beach and Harbor Area)
- Urban and Environmental Policy Institute based at Occidental College (Los Angeles)
- Community Outreach & Education Program of the Southern California Environmental Health Sciences Center (USC/UCLA) and the Children's Environmental Health Center, based at the University of Southern California Keck School of Medicine (Los Angeles)

The collaborative uses science-based information to inform public policy decision-making to encourage healthy solutions for communities impacted by ports, rail yards, intermodal facilities, distribution centers, trucking routes and other goods movement expansion activities. One of THE Impact Project's goals is to ensure that reducing health, environmental and community impacts becomes central to the transportation and goods movement planning and policy process. THE Impact Project also seeks to shift the nature of the debate about ports and freight movement to elevate community voices in the policy arena, while also using the science and policy work of the academic partners to strengthen those voices.

## **DESCRIPTION OF THE IMPACT PROJECT PARTNERS**

### **Center for Community Action and Environmental Justice**

CCAIEJ is one of the oldest and most accomplished environmental health and justice organizations in the nation, with a history dating back to 1978. Located in the Inland Valley, CCAIEJ's mission is to bring people together to improve our social and natural environment. It does this by empowering diverse communities to create safer, healthier, toxic free places to live, work, learn and play.

### **Coalition For A Safe Environment**

CFASE is a nonprofit community-based organization based in Wilmington, CA that seeks to improve environmental health and justice in the Harbor communities near the Ports of Los Angeles and Long Beach. CFASE is involved in policy issues at all levels of government.

### **Community Outreach and Education Core of the Southern California Environmental Health Sciences Center (USC/UCLA)**

The Community Outreach and Education Core (COEC) of the Southern California Environmental Health Sciences Center (SCEHSC) serves as a link between Center scientists from the USC and UCLA and the community. The outreach program seeks to improve health by investigating environmental exposures, addressing risks from these exposures, and informing the community and public policy about new research studies on environmental health.

### **East Yards Communities for Environmental Justice**

EYCEJ is a nonprofit organization based in the City of Commerce, CA, working towards a safe and healthy environment for communities. Members are particularly concerned about the impacts of port traffic (rail and container trucks) through their community and at the two intermodal facilities in their neighborhood. EYCEJ is working toward protective policies at the local, state and national levels.

### **Long Beach Alliance for Children with Asthma**

LBACA is a broad-based community coalition working towards changing the profile of childhood asthma in the cities of Long Beach, Carson, San Pedro, and Wilmington through improved health care delivery and quality, outreach, education, support systems, and living environments and through changes in policy at all levels. LBACA reaches out to parents of children with asthma with best practice asthma management information, and also helps develop policies to protect children.

### **Urban and Environmental Policy Institute at Occidental College**

UEPI is a community oriented research and advocacy organization based at Occidental College in Los Angeles. It serves as the umbrella for a variety of affiliated programs addressing work and industry, food and nutrition, housing, transportation, regional and community development, land use, and urban environmental issues.

## **Conference Objectives**

The objectives of the Conference are to:

- Share research findings from scientific studies on the health effects of air pollution on children, the elderly, workers, and others;
- Provide an opportunity for community members & workers to voice environmental health concerns about trade, ports and goods movement activities;
- Share information on strategies for reducing exposure to diesel exhaust, ultrafine particles and other air pollutants;
- Provide an opportunity to discuss the policy implications of increased international trade and goods movement on community health and worker safety, as well as on air quality, jobs, the economy, traffic, and community life; and
- Develop a communications network for sharing the latest research findings, information on new goods movement infrastructure projects, and environmental health solutions.

## **Long-Term Goals**

The conference is part of an information sharing process with long-term goals of:

- Building momentum to deal with the environmental health challenges of goods movement;
- Sharing local, regional, national and international concerns and solutions;
- Considering community and worker concerns when developing scientific research agendas; and
- Having health and safety considerations become an integral component of goods movement and transportation decisions.

## **Topics of Discussion**

Attendees will participate in discussions of:

- Relevant scientific findings on air pollution and health effects;
- Impacts of trade and goods movement on health and air quality, as well as on traffic, jobs, the environment and the economy;
- Local and regional impacts from transporting, warehousing, and distributing goods;
- Solutions to reduce diesel exhaust and other air pollutants and prevent hazardous materials spills and other incidents; and
- Ways to share information in the future.

## **"Moving Forward" Conference Program**

A conference on healthy solutions for communities impacted by trade, ports & goods movement

### **Day 1: Friday, November 30, 2007**

*Themes: Health Concerns, Latest Research Findings, and Successes/  
Challenges for Protecting Health*

Day 1 is sponsored by the Southern California Environmental Health Sciences Center (SCEHSC), supported by the National Institute of Environmental Health Sciences (NIEHS); the Children's Environmental Health Center, supported by NIEHS and the U.S. Environmental Protection Agency (U.S. EPA); the Center for Occupational and Environmental Health (UCLA); the William and Flora Hewlett Foundation; the South Coast Air Quality Management District; the Panta Rhea Foundation; and the Trade, Health & Environment Impact Project, supported by The California Endowment.

Co-sponsors, Conference Supporters & Community Partners are listed at end of Program.

**7:30AM REGISTRATION, LIGHT BREAKFAST AND COFFEE (Atrium)**

**8:00AM WELCOME AND INTRODUCTION (Community Hall)**

*Welcome to the Conference*

Frank Gilliland, USC

*Introductions*

Andrea Hricko, USC

*The global dimensions of goods movement and health*

Andrea Hricko, USC

*Saving lives campaign and a welcome from labor*

Joe Radisich, ILWU

*Life in a goods movement corridor*

Angelo Logan, EYCEJ

*Mapping communities along goods movement corridors*

Andrea Hricko, USC, and

Angelo Logan, EYCEJ

**9:00AM LATEST HEALTH RESEARCH FINDINGS (Community Hall)**

*An opportunity to learn about current research findings on the health impacts of air pollution— scientists from the SCEHSC*

Moderator: Ingrid Lobet, "Living on Earth" reporter

*Port and goods movement emissions*

Ed Avol, USC

*Overview of health impacts*

John Peters, USC

*Diesel and ultrafine particle exposures*

John Froines, UCLA

Resource Scientists:

Rob McConnell, USC	Kiros Berhane, USC
Nino Kunzli, CREAL, USC	Bill Hinds, UCLA
Tracy de Villiers, USC	Beate Ritz, UCLA
Jim Gauderman, USC	Scott Fruin, USC
Edith Parker, U. Michigan	Carrie Breton, USC
Alison Geyh, Johns Hopkins	Elinor Fanning, UCLA

10:00AM **BREAK**

10:15AM **COMMUNITY AND LABOR PERSPECTIVES ON HEALTH**  
(Community Hall)

*Why we are here, building a network*

Moderator: Ingrid Lobet, "Living on Earth" reporter

11:30AM **LUNCH** (Served in Atrium)

12:15PM **SUCSESSES AND CHALLENGES PANEL** (Community Hall)

*Speakers will discuss their organizations' successes and challenges in addressing the impacts of goods movement. Themes: community mobilization, law and policy, use of research findings, coalition building, and community-academic partnerships.*

Moderator: Luke Cole, Center on Race, Poverty and the Environment

Panelists:

*Partnerships: LBACA, THE Impact Project, and the Port Working Group of Green L.A.*

Elina Green, LBACA

*Creating buffers between homes and development*

Karen Bradford, HOME

*Reducing port diesel emissions*

Margaret Gordon, Ditching Dirty Diesel Collaborative

*The China Shipping lawsuit and its impact on clean air advances*

Janet Gunter, San Pedro, and

Melissa Lin-Perrella, NRDC

*I-710 Freeway Expansion: the process*

Yuki Kidokoro, CEHAJ

1:15PM **OPEN MICROPHONE: SUCCESSES AND CHALLENGES**  
(Community Hall)

*Open microphone: conference participants invited to share their successes and challenges*

Moderator: Luke Cole, CRPE

1:45PM. **BREAK**

2:00PM **AFTERNOON BREAKOUT SESSIONS:** (Attend one session)

***SHARING WORKER AND COMMUNITY CONCERNS  
AND STRATEGIES***

*An opportunity to meet and discuss goods movement issues by type of community or concern with other participants from around the globe.*

◦ **GOODS MOVEMENT 101** (Community Hall)

*Designed to provide an introduction to issues surrounding ports, the movement of cargo, and health.*

**Goods Movement 101**

Jennifer Lucky, UCLA MPH student

Resource Persons:

Isella Ramirez, EYCEJ

Jesus Torres, CBE

Frank Gilliland, USC

Alison Geyh, Johns Hopkins

Sofia Carillo, CFASE

John Froines, UCLA

Alena Groopman, USC

◦ **PORTS** (Adult Activity Room)

Facilitator: Clint Bradford, HOME

Resource persons:

Tom Politeo, Sierra Club

Nino Kunzli, CREAL, USC

Kathleen Woodfield, San Pedro

Dave Beeman, ILWU

Nancy Vinson, SCCCL

Ed Avol, USC

◦ **RAIL** (International 132)

Facilitator: Rupal Patel, CCP

Resource persons:

Gary Quick, BLET

Scott Fruin, USC

Carla Truax, USC

Eric Kirkendall, Johnson County, KS

Pat Kennedy, ICO

Jan Misquez, CCAEJ



• **FREEWAY EXPANSION (Room 107AB)**

Facilitators: Rev. William Smart, LAANE; Jon Zerolnick, LAANE

Resource persons:

Rob McConnell, USC	Beate Ritz, UCLA
Bob Yuhnke, Attorney	Gilbert Estrada, USC
Elisa Nicholas, LBACA	Sarah Ritter, Oxy
Michael Replogle, Env. Defense	
Daniella Simonovic, Fresno Metro Ministries	

• **DISTRIBUTION CENTERS AND WAREHOUSES**

(Room 209)

Facilitator: Diane Forte, Environment Now

Resource persons:

Colleen Smethers, CCAEJ	John Peters, USC
Mark Vallianatos, Oxy	Edgar Rojas, CCAEJ
Dennis McFarlane, ILWU	

• **TRUCKING AND TRUCK ROUTES (Room 111)**

Facilitator: Jonathan Parfrey, Liberty Hill/Green L.A.

Resource persons:

Jim Gauderman, USC	Steve Anderson, HOME
Joy Williams, EHC	Jon Zerolnick, LAANE
Edith Parker, U. Michigan	
Marlene Grossman, Pacoima Beautiful	

3:15PM **DAY 1 WRAP-UP (Community Hall)**

Health impacts review, shared experiences

Bob Gottlieb, Oxy

Announcements and Logistics

Andrea Hricko, USC

3:45PM • **VISIT COMMUNITY PARTNER BOOTHS,  
PHOTO EXHIBITS, MEDIA ROOM (West Wing)**

OR

• **OPPORTUNITIES FOR NETWORKING:**

**COMMUNITY CONNECTIONS (107AB)**

OR

• **INFORMATIONAL SESSIONS:** Prop 1B Discussion led by Rafael Aguilera, and Freeway Expansion Discussion led by Bob Yunke and Michael Replogle (Adult Activity Room)

5:00PM **ADJOURN**

## **DAY 2: Saturday, December 1, 2007**

*Themes: Defining solutions and strategies for change, drafting a platform for action, next steps*

Day 2 is sponsored by the Trade, Health & Environment Impact Project, supported by The California Endowment; the William and Flora Hewlett Foundation; the Panta Rhea Foundation; and the South Coast Air Quality Management District.

Co-sponsors, Conference Supporters & Community Partners listed at end of Program

8:30AM     **REGISTRATION, LIGHT BREAKFAST AND COFFEE (Atrium)**

9:00AM     **WELCOME (Community Hall)**  
              Bob Gottlieb, Oxy

9:30AM     **GLOBALIZATION IMPACTS: ECONOMIC AND  
COMMUNITY ISSUES (Community Hall)**

*Issues to be addressed: 1) Globalization impacts on regional and national economies, labor, and communities; 2) The health, environmental, community and employment impacts not ordinarily associated with the economic costs of globalization; and 3) Potential alternatives.*

Moderator and opening comments  
Penny Newman, CCAEJ

*Global economy impacts on industries in LA and nationally, job loss, economic restructuring*  
Goetz Wolff, UCLA

*Jobs in the goods movement sector*  
Jon Haveman, Beacon Economics

*American Imports, Chinese Deaths*  
Loretta Tofani, Journalist

10:30AM    **MORNING WORKSHOPS: (Attend one session)**  
*Developing skills and building movements for change*

• **MOBILIZING FOR ACTION: KNOW WHO  
THE PLAYERS ARE (Room 107AB)**

*Workshop will show participants how to conduct a ports and goods  
movement power analysis to identify key stakeholders*

Workshop Leaders:

Martha Matsuoka, Oxy  
Jennifer Ito, SCOPE

Resource Person:

Rick Worthington, Pomona College

• **CHALLENGES AND OPPORTUNITIES FOR LABOR,  
COMMUNITY, AND ENVIRONMENTAL ALLIANCES  
(Adult Activity Room)**

Facilitator: Sabrina Smith, SCOPE

Panelists:

Manuel Roman, Change to Win	Penny Newman, CCAEJ
Patricia Castellanos, LAANE	Bill Gallegos, CBE
Adriano Martinez, NRDC	Jerilyn Lopez-Mendoza, Env. Defense
Dave Arian, Harry Bridges Inst.	

• **GLOBALIZATION ISSUES: FOOD AND IMPORTED  
GOODS (Room 209)**

*Globalization and food issues*

Mark Vallianatos, Oxy  
Andy Fisher, Community Food Security Coalition

• **WORKER AND COMMUNITY HEALTH: EXPOSURES,  
YOUR RIGHT TO KNOW, AND STRATEGIES (Room 111)**

Facilitator: Timothy Grabiell, NRDC

Workshop Leaders:

Linda Delp, UCLA-LOSH  
Ingrid Zubieta, UCLA-LOSH

Resource Persons:

Swati Prakash, Pacific Institute	Gary Quick, BLET
Khadeeja Abdullah, UCLA-LOSH	Jesse Marquez, CFASE
Danielle Lucido, Worksafe	Eugene Banday, ILWU Local 94

• **MEDIA STRATEGIES: BRINGING HEALTH TO THE FOREFRONT OF TRANSPORTATION POLICY DECISIONS**  
(International 132)

Facilitator: Barbara Maynard, Maynard Consulting

Panelists:

Daniel Nord, San Pedro  
Rachel Lopez, CCAEJ

• **METHODS FOR ASSESSING HEALTH IMPACTS**  
(Community Hall)

Moderator: Liam O'Fallon, NIEHS

*Cumulative Impacts*

Karen Pierce, Bayview Hunters Point  
Jennifer Tran, USC

*Health Risk Assessments*

Angelo Logan, EYCEJ  
Joe Lyou, CERA

*Health Impact Assessments*

Edmund Seto, UC Berkeley

Resource person:

Elina Green, LBACA

11:45AM **LUNCH** (*Served in Atrium*)

12:30PM **INSTRUMENTS FOR CHANGE PLENARY SESSION**  
(Community Hall)

*Panelists briefly introduce each topic that will be covered in depth during the following afternoon breakout sessions.*

Moderator: Michele Prichard, Liberty Hill

*Land use decisions: protecting health*

Tony LoPresti, EHC

*Alternative technologies to reduce emissions*

Jesse Marquez, CFASE

*Developing a stronger political voice*

Brian Beveridge, West Oakland

*Ports/goods movement, air pollution and climate change: what are the connections?*

Candice Kim, CCA

*Getting involved in your community*

Sylvia Betancourt, CCAEJ  
Martha Cota, LBACA

1:15PM **AFTERNOON BREAKOUT SESSIONS:** *(Attend one session)*

• **LAND USE DECISIONS: PROTECTING HEALTH**  
(Community Hall)

Facilitator: James Rojas, Latino Urban Forum

Panelists:

Tony LoPresti, EHC  
Cindy Lopez-Elwell, HOME  
Suzanne Arnold, School Nurse  
Jose Medina, Old Town National City

Resource persons:

Betty Anderson, CCAEJ  
Jean Ambruster, PLACE  
Jennifer Allen, Livable Places

• **ALTERNATIVE TECHNOLOGIES TO REDUCE EMISSIONS** (Adult Activity Room)

Facilitator: Mitzi Shpak, Action Now

Examples of technology presented by:

Jesse Marquez, CFASE  
Ken James, Cal State Long Beach  
Carrie Scoville, Cal State Long Beach  
Clean Air Logix, (Clean Air Marine Power)  
Vycon Energy  
Advanced Cleanup Technologies, (Advanced Locomotive Emission Control System)

• **DEVELOPING A STRONGER POLITICAL VOICE:  
HOW DIFFERENT GROUPS MAKE IT HAPPEN AT  
THE LOCAL, STATE, AND NATIONAL LEVEL**  
(International 132)

*Building a strategy to create tools for use around goods movement issues*

Facilitator: Joel Ervice, RAMP

Resource Persons:

Brian Beveridge, West Oakland  
Martin Schlageter, CCA  
Melissa Lin Perella, NRDC  
Angelo Logan, EYCEJ

• **PORTS/GOODS MOVEMENT, AIR POLLUTION AND CLIMATE CHANGE: WHAT ARE THE CONNECTIONS?**  
(Room 107AB)

Facilitator: Linda Weiner, ALAC

*General overview of global warming*  
Candice Kim, CCA

*Global warming and ship emissions*  
Teri Shore, FoE

*Key statistics on freight transport, soot and ozone and their relationship to global warming, rail and truck issues*  
Colleen Callahan, ALAC

Resource person:  
Kathy Attar, PSR-LA

• **GETTING INVOLVED IN YOUR COMMUNITY, AND GETTING YOUR COMMUNITY INVOLVED** (Room 111)

*Community mapping; surveying your neighborhood (traffic counting, air pollution monitoring); testifying at public hearings and meetings.*

Facilitator: Sylvia Betancourt, CCAEJ

*Tools for community organizing*  
A Teams from CCAEJ and LBACA

Presenters:

*Martha Cota, Rosa Maria Vielmas, Raquel Contreras*

Resource persons:

*Elba Jimenez, Rebecca Jimenez, Alexandra Jimenez*

*How to Use Goods Movement 101 Trainings in Your Community*  
Isella Ramirez, EYCEJ

*Testifying at Public Hearings and Meetings*  
Cynthia Romo, LBACA

2:30PM **BREAK**

2:45PM **CONCLUSION: ALTERNATIVE VISION/  
PLAN OF ACTION PLENARY** (Community Hall)

*Conference wrap-up, creating a platform, and follow-up*  
Bob Gottlieb, Oxy  
Michele Prichard, Liberty Hill

3:30PM **ADJOURN**

## Organization Abbreviations

<b>A-Teams:</b>	Neighborhood Assessment Teams
<b>ALAC:</b>	American Lung Association of California
<b>BLET:</b>	Brotherhood of Locomotive Engineers (Teamsters)
<b>CBE:</b>	Communities for a Better Environment
<b>CCA:</b>	Coalition for Clean Air, Sacramento and Los Angeles
<b>CCA EJ:</b>	Center for Community Action and Environmental Justice, Riverside and San Bernardino
<b>CCP:</b>	Communities for Clean Ports, Los Angeles
<b>CEHC:</b>	Children's Environmental Health Center
<b>CERA:</b>	California Environmental Rights Alliance, Los Angeles
<b>CFASE:</b>	Communities For A Safe Environment, Wilmington and Harbor area
<b>COEH:</b>	Center for Occupational and Environmental Health at UCLA
<b>CRPE:</b>	Center on Race, Poverty and the Environment, San Francisco
<b>DDDC:</b>	Ditching Dirty Diesel Campaign, Oakland
<b>ED:</b>	Environmental Defense
<b>EHC:</b>	Environmental Health Coalition, San Diego
<b>EYCEJ:</b>	East Yard Communities for Environmental Justice, Commerce and East LA area
<b>FoE:</b>	Friends of the Earth, San Francisco
<b>HOME:</b>	Help our Mira Loma Environment, Riverside
<b>ILWU:</b>	International Longshore and Warehouse Union
<b>KSOM:</b>	Keck School of Medicine, USC
<b>LAANE:</b>	Los Angeles Alliance for a New Economy
<b>LBACA:</b>	Long Beach Alliance for Children with Asthma
<b>LOSH:</b>	UCLA Labor Occupational Safety and Health Program
<b>NIEHS:</b>	National Institute of Environmental Health Sciences
<b>NRDC:</b>	Natural Resources Defense Council
<b>Oxy:</b>	Occidental College, Los Angeles
<b>PSR-LA:</b>	Physicians for Social Responsibility, Los Angeles
<b>RAMP:</b>	Regional Asthma Management and Prevention, San Francisco
<b>SCEHSC:</b>	Southern California Environmental Health Sciences Center (USC/UCLA)
<b>SCOPE:</b>	Strategic Concepts in Organizing and Policy Education, Los Angeles
<b>SCPC:</b>	Southern California Particle Center, UCLA
<b>UCLA:</b>	University of California, Los Angeles
<b>UEPI:</b>	Urban and Environmental Policy Institute, Occidental College
<b>USC:</b>	University of Southern California, Los Angeles
<b>U.S. EPA:</b>	U.S. Environmental Protection Agency

## Conference Participant Bios

### Biographical Information for Conference Speakers, Facilitators and Resource Persons *(alphabetized by first name)*

**Adrian Martinez** is a project attorney in the Santa Monica office of the NRDC.

**Alena Groopman** is public health coordinator for the community outreach and education program of SCEHSC, based at the Keck School of Medicine at USC.

**Alison Geyh** is on the faculty at the Johns Hopkins Bloomberg School of Public Health in Baltimore, MD.

**Andrea Hricko** is the director of the community outreach and education program of the SCEHSC, and associate professor, Department of Preventive Medicine, the Keck School of Medicine at USC.

**Andy Fischer** is director of the Community Food Security Coalition in LA.

**Angelo Logan** is co-founder and director of EYCEJ.

**Barbara Maynard** is president of Maynard Consulting Services, Inc.

**Beate Ritz** is a physician, professor of epidemiology at UCLA School of Public Health, and a member of both the UCLA COEH and the SCEHSC.

**Betty Anderson** is a 19-year resident of Mira Loma, in northwest Riverside County and a member of CCAEJ.

**Bill Gallegos** is the executive director of CBE.

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The Center, funded by NIEHS, is a collaboration of more than 50 USC and UCLA scientists based at USC's Keck School of Medicine. SCEHSC investigators study the effects of the environment on human health. The Community Outreach and Education Program of the Center serves as a link between center scientists and the community. For more information, please see [www.usc.edu/medicine/scehsc](http://www.usc.edu/medicine/scehsc).

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The Center, based at the Keck School of Medicine, USC, is a collaboration of a dozen USC and UCLA scientists. CEHC investigates the effects of the environment on children's respiratory health with a focus on asthma and allergic airway disease and susceptible subgroups of children.

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**UCLA Labor Occupational Safety and Health Program (LOSH)**

LOSH is part of the UCLA COEH focusing on worker health and safety training, educational materials development, and technical assistance. Its Hazardous Waste Worker Training Project is funded by the NIEHS. For more information, please see [www.losh.ucla.edu](http://www.losh.ucla.edu)

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The AQMD is the air pollution control agency for all of Orange County and the urban portions of Los Angeles, Riverside and San Bernardino counties. It believes that all who live or work in this area have a right to breathe clean air. AQMD is committed to undertaking all necessary steps to protect public health from air pollution, with sensitivity to the impacts of its actions on the community and businesses, which is accomplished through a comprehensive program of planning, regulation, compliance assistance, enforcement, monitoring, technology advancement, and public education. For more information, please see [www.aqmd.gov](http://www.aqmd.gov).

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The City of Carson serves as the host for the "Moving Forward" Conference.

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The Coalition for Clean Air is committed to restoring clean, healthy air to all of California and strengthening the environmental movement by promoting broad-based community involvement, advocating responsible public policy and providing technical expertise. For more information, please see [www.coalitionforcleanair.org](http://www.coalitionforcleanair.org).

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Environmental Health Coalition is one of the oldest and most effective grassroots organizations in the United States, using social change strategies to achieve environmental justice. It is dedicated to achieving environmental and social justice. For more information, please see [www.environmentalhealth.org](http://www.environmentalhealth.org).

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**Jay's Catering**

Jay's Catering is providing the breakfast, lunch and all-day coffee service for the "Moving Forward" Conference.

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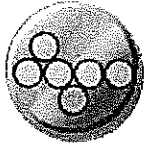
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**June 30, 2009 Tabulation of CDC WONDER Mortality Database**  
(<http://wonder.cdc.gov/cmfi-icd10.html>)

**2000-2005 & 2005 Age-Adjusted Total Death Rate by State**  
**Lowest Rates, Highlighting California and Los Angeles County**  
**(annual deaths per 100,000 using 2000 US Standard Population)**

<u>State</u>	<u>2000-2005</u>	<u>2005</u>
Hawaii	653	628
Minnesota	725	691
Los Angeles County	739 (0.887)	703 (0.880)
North Dakota	746	714
California	753 (0.904)	718 (0.899)
Connecticut	756	726
United States	833 (1.000)	799 (1.000)



## *Southern California Particle Center*

June 4, 2008

Senator Don Perata  
Senate President Pro Tem  
Chair, Senate Rules Committee  
State Capitol, Room 205  
Sacramento, CA 95814

Dear Mr. Perata,

I am writing this letter to support the appointment of Ms. Mary Nichols as Chairperson of the California Air Resources Board (ARB) and to comment on some of the issues surrounding control of air pollution in California with its public health implications. In my view, Ms. Nichols is likely the most qualified person in the U.S. to fulfill the role of ARB Chair. She has a long and stellar history addressing air pollution issues at both the State and Federal levels and she has demonstrated leadership, intelligence, and administrative skills. For example, she was central to the development of standards for PM 2.5 to address excess mortality from ambient fine particles at U.S. EPA. Under Mary Nichols the ARB adopted new rules requiring the construction industry to upgrade its equipment to reduce diesel and greenhouse gas emissions. This regulation is the first rule in the U.S. focused on cleaning up diesel emissions from off-road construction equipment. She is committed to addressing global climate change issues in the State as well as continuing the progress on air pollution control and health protection. I believe the State is fortunate to have a person of Ms. Nichols' caliber to Chair this important government agency.

I am Professor of Toxicology in the UCLA School of Public Health. I direct one of the five Centers funded by U.S. EPA to address the underlying issues associated with public exposure to airborne particulate matter (PM), the Southern California Particle Center (SCPC). I also direct the legislatively mandated UCLA Center for Occupational and Environmental Health (COEH) and a program funded by the South Coast Air Quality Management District called the Asthma Consortium on Air Quality. I am Chair of the Scientific Review Panel (SRP) which was established under AB 1807 to address the issue of Toxic Air Contaminants (TAC) in California. The SRP is a legislatively mandated technical peer review committee advisory to the ARB, the Office of Environmental Health Hazard Assessment (OEHHA) and the Department of Pesticide Regulation (DPR). I was appointed to my membership by the Speaker of the Assembly and later made Chair by the Secretary of CAL/EPA. The SRP is responsible for reviewing proposed toxic air contaminants and risk assessment guidelines. The SRP's task is to ensure that the science behind certain decisions is sound. Since its inception, the SRP has identified 29 toxic air contaminants (TACs), and evaluated the determination of 299 health values for hazardous air pollutants as TACs. Mary Nichols has been a strong supporter of the role of the SRP through her support for strong science based evaluation of air contaminants. She clearly recognized the

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importance of having prestigious scientists provide advice to the Agency to facilitate the peer review process of the SRP.

The role of the SRP within the context of AB 1807 is at times difficult and demanding because the determinations are at times controversial. For example, in my role as Chair of the SRP, I had the responsibility of providing leadership on the review of the documents prepared by the ARB and OEHHA on the determination of whether diesel particulate should be recommended to be listed as a TAC. The process of review was begun in 1989 and completed in 1998. The ARB and OEHHA documents had determined there was causal evidence that exposure to diesel particulate resulted in lung cancer based on human occupational epidemiological studies and therefore met the criteria for listing as a TAC.

Research work since 1998 has confirmed these original conclusions, for example, Garshick et al in a paper in *Environmental Health Perspectives* concluded: "Lung cancer mortality in workers (railroad workers) in diesel exposed jobs was elevated in this cohort.....these results indicate that the association between diesel exhaust exposure and lung cancer is real." More recently, in a 2008 paper, Garshick et al. concluded: "Trucking industry workers who have had regular exposure to vehicle exhaust from diesel and other types of vehicles on highways, city streets, and loading docks have an elevated risk of lung cancer with increasing years of work." In other words, the findings of the State scientists and the ARB have been confirmed several times since 1998. There are probably 40-50 studies now available to indicate the significant risk associated with exposure to diesel exhaust.

It is apparent that air pollution related to traffic (mobile source) emissions may be a key contributor to adverse health impacts. There is considerable evidence that traffic related pollution may have significant consequences throughout California. Booth and Shendell (2008) have reviewed the literature on potential health affects associated with residential proximity to freeways and primary roads and concluded: "Studies we reviewed consistently reported statistically significant associations between residential proximity to traffic and at least one of the following adverse health effects: increased prevalence and severity of symptoms of asthma and other respiratory diseases, diminished lung function, adverse birth outcomes, childhood cancer, and increased mortality risks." The Children's Health Study (CHS) conducted by investigators at the University of Southern California and funded by the ARB showed important consequences on lung growth in children. Finally, in a landmark study Jerrett et al. (2005) demonstrated increased relative risks from ischemic heart disease and lung cancer in Los Angeles with the finding being robust for expressway exposure.

The research conducted in the U.S. with particular emphasis on work carried out in California over the past decade since the recommendation of diesel particulate as a TAC has demonstrated that the health problems associated with air pollution are still a major factor in the lives of the population. There have been demonstrable improvements in the quality of the air compared to past decades, but we have identified new health endpoints with significant risks. A May 2008 ARB press release on premature deaths from particle pollution being higher than originally thought, quoted Ms. Nichols as saying: "Particle pollution is a silent killer. We must work even harder to cut these life-shortening emissions by further addressing pollution sources head-on."

Recently the ARB has developed a Goods Movement Emission Reduction Plan. This plan has unique importance in the addressing of potential health risks associated with the growth of goods movement in the LA Basin. I have never in my career seen a plan that was more thoroughly

reviewed by the scientific community. A description of the review is attached to this letter. The Plan has major implications for addressing risks associated with air pollution linked to goods movement including trucks, ships, rail and stationary sources. This report will enable effective planning for addressing health issues over time, under ARB Chair Nichols' leadership.

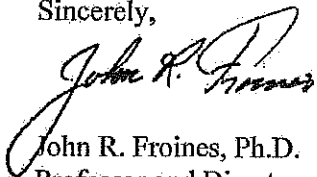
I have reviewed some of the highlights of the ARB's efforts over time to demonstrate the high degree of competency that they and OEHHA possess. There are no State programs of equal stature to those of California throughout the U.S. The ARB is unique in terms of its productivity, resourcefulness, and overall leadership in the field of air pollution. Finally its document on environmental tobacco smoke is unparalleled and represents the single most important document in the area of tobacco smoke. It is at least equal to the reports of the U.S. Surgeon General.

This review has not sought to be exhaustive; I wanted to accomplish three elements: 1) the SRP has been an important peer review scientific body that has served the ARB, OEHHA and DPR effectively since its formation in 1983 by having highly skilled scientists as members of the Panel; 2) the ARB has addressed a wide range of key issues relating to the health consequences of air pollution and is widely recognized for its contributions, and 3) Mary Nichols' first experience as Chair of the ARB, later in charge (assistant administrator) of air and radiation for EPA and now Chair of ARB again provides her with the extensive experience required to perform effectively in a highly scientific world with significant policy, law and economics factors needing to be addressed. She is capable of working with all sides on an issue to more effectively find solutions acceptable to all parties, but she is also able to recognize that some decisions require a firm hand.

The role of the Chair of ARB has been made more challenging by giving ARB the responsibility for addressing issues associated with global climate change as well as issues of air pollution. These responsibilities will require a leader of great skill and commitment. I believe Ms. Mary Nichols has all the strengths and commitment required of the person who will Chair the ARB during this crucial period of time. She is unparalleled as a leader and will be able to take ARB in new directions that will solidify its already impressive record.

I appreciate the opportunity to comment on this appointment and I am available if you have further questions.

Sincerely,



John R. Froines, Ph.D.  
Professor and Director  
Center for Occupational and Environmental Health



## Attachment

### **Supporting information for the California Air Resources Board's health risk assessment of mortality associated with ambient particulate matter and diesel particulate matter exposures**

California's approach for assessing the health risk associated with fine airborne particulate matter (PM<sub>2.5</sub>) exposures is consistent with methodologies used by the U.S. Environmental Protection Agency (U.S. EPA) and the World Health Organization.

Hundreds of studies conducted around the world provide strong evidence for the influence of PM<sub>2.5</sub> on premature death. This strong link was further supported by an independent panel of experts elicited by U.S. EPA in 2006. However, only a subset of these studies is suitable for assessing the relative risk applicable to California's general population and for regulatory impact analyses.

The California Air Resources Board (CARB) reviewed an extensive amount of peer-reviewed literature in concluding that a strongly positive association exists between long-term exposures to PM<sub>2.5</sub> and the increased risk of premature death. While there may be a few studies that suggest a lack of evidence for the relationship, the overwhelming evidence suggests the relationship is positive.

In developing the Goods Movement Emission Reduction Plan (2006), CARB staff included a health risk assessment methodology. This methodology underwent a rigorous peer review process by the following experts, all of whom agree with CARB's analysis on diesel PM health impacts:

- 1) John Froines, UCLA
- 2) Jane V. Hall, CSU Fullerton
- 3) Aaron Hallberg, Abt Associates
- 4) Michael Jerrett, USC (now UC Berkeley)
- 5) Melanie Marty, Cal/EPA - OEHHA
- 6) Constantinos Sioutas, USC
- 7) Akula Venkatram, UC Riverside.

Since developing the Goods Movement Plan, CARB further reviewed the most recent literature to evaluate the latest findings on the PM-premature death relationship. Over 20 publications in peer-reviewed journals published since 2002 were reviewed. It was concluded that the evidence linking long-term PM<sub>2.5</sub> exposure and premature death is even stronger than previously estimated. This conclusion was supported by CARB's advisors for this effort (Arden Pope, Brigham Young University; Jonathon Levy, Harvard University; and Bart Ostro, Cal/EPA - OEHHA) and also by an independent peer review

panel organized by the University of California, Berkeley, Institute for the Environment.  
The panel was composed of the following experts:

- 1) Jeffery Brook, Environment Canada
- 2) Mark D. Eisner, UC San Francisco
- 3) Richard C. Flagan, Cal Tech
- 4) Alan Hubbard, UC Berkeley
- 5) Joel Kaufman, University of Washington
- 6) Joel Schwartz, Harvard University

Finally, an informal symposium was convened in March 2008 by CARB and Cal/EPA's Office of Environmental Health Hazard Assessment (OEHHA) to solicit input from several well-known researchers in the field of air pollution. The participants in the symposium all agreed with CARB's conclusion on the PM-mortality relationship. Symposium participants included:

- 1) John Balmes, UC San Francisco
- 2) Bert Brunekreef, Utrecht University
- 3) John R. Froines, University of California, Los Angeles
- 4) Daniel S. Greenbaum, Health Effects Institute
- 5) Michael Jerrett, UC Berkeley
- 6) Michael Kleinman, UC Irvine;
- 7) Daniel Krewski, University of Ottawa
- 8) Michal Krzyzanowski, World Health Organization
- 9) Kent Pinkerton, UC Davis
- 10) C. Arden Pope III, Brigham Young University
- 11) Bart Ostro, OEHHA



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CONSTRUCTION CO., INC.

June 08, 2009

Governor Arnold Schwarzenegger  
State Capitol Building  
Sacramento, CA 95814

RE: California Air Resources Board's Part in our Economic Collapse

Dear Governor Schwarzenegger,

The current economic condition in California is exacerbated by government taxes and overregulation. I wrote to you on November 25, 2008 (entitled "Outcome of California Air Resource Board's Regulations") about this small businessman's view of the resultant consequences. Thank you for the form letter I received in December outlining grant and loan assistance for "some" businesses. Unfortunately, due to my prudent business management practices, my firm did not qualify for the grants and my diesel equipment and trucks are not used enough to meet Moyer requirements for assistance. I will not borrow money to upgrade equipment in today's economic environment. Without jobs to put the equipment on, how do I repay the loan? CARB has no appreciation for my prudent business practices and no concern for my small business.

There has been some minor modification of CARB regulations at the Legislative level to "put off some of the initial requirements" until 2012. However, this modification will NOT MAKE ONE BIT OF DIFFERENCE to businesses like mine, which represents the majority of employment in California's construction and transportation industries. This simply indicates that the re-arranging of the deck chairs on the good ship California has begun.

I do not need to go into our State's financial woes to you as you already keenly aware of them. Suffice it to say, small business is sharing in these woes, with the exception that we do not have an agency such as CARB which can extract penance for those who just cannot afford to go out and "update or buy new trucks and equipment". The decimation of my financial condition due to loss of "once valuable" assets via edict has seriously hindered my borrowing and bonding capacity. Soon I will be unable to (legally) use these assets to perform work. All of this while the State Compensation Insurance Fund just announced a rate increase of 37.5% for Street or Road Construction, Paving (Code 5506).

To add to California's woes, now we will have to pay attorneys to defend illegal regulations enacted by CARB. In 2008 the Ninth Circuit Court of Appeals (Pacific Merchant Shipping v. California Air Resources Board) confirmed that CARB cannot regulate a substantial portion of the diesel engines for which it has set standards. Lawsuits will certainly follow. Furthermore, serious doubts have recently been raised about the public health justification for all of CARB's diesel regulations. There is substantial epidemiological evidence that there is no current

relationship between fine particulate matter (PM2.5) and premature death in California. Although California is one of the healthiest states in the country, CARB has been systematically exaggerating the health effects of diesel PM.

California is experiencing premature unemployment due to CARB diesel regulations, not premature deaths due to diesel PM emissions. CARB is out of control and needs an objective air pollution scientist to take over the reins from the current Chair, who is an activist environmental lawyer with no appreciation for objective science or for small business in California.

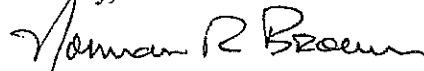
The regressive taxation in the form of increased prices for goods caused by mandating replacement of perfectly good trucks and equipment by CARB will wreck havoc to those on fixed incomes. Additionally, these regulations will continue to increase the unemployment rate that is already setting records in California. You need to realize that this economic debacle has been brought about (at least in part) by government overregulation interjected into market forces, and CARB's mandates will see to it that the potential for recovery is nil until the regulations are abated.

You will be unable to "tax" us back into prosperity any more than you can solve our debt problems by increasing our debt. Your decree to make California the leader in the "green movement" will lead to financially sinking our State into depths unknown. Unemployment, in part caused by the continued destruction of businesses such as mine, is exacerbated by an unrestricted CARB, which will be busy extracting fines from those who cannot afford to rebuild or replace their assets. Our collective budget is busted with NO positive outlook for improvement. Meeting CARB's restrictive standards will be accomplished by small and medium sized businesses solely through attrition. Along with the destruction of these assets will be the elimination of employment and the very tax base necessary for the continuation of any and all government, be it local, State or Federal.

I see via the news that you are getting serious about a reduction in State Forces. I commend you for this effort. What is missing is the reduction in CARB diesel regulations. The transportation, farming, construction, timber and all other industries affected by these draconian regulations will suffer immeasurable losses. Read, no taxes from these folks to the State. The ONLY hope that California has to survive is held in the survival of businesses such as mine, which employ people who are the very tax base of the State. **By mandating destruction of business, you mandate destruction of the State.**


I have not taken a salary from my company since September, 2008, in the effort to maintain the employment of my key people. So far, they are still with me. This will not last, however, as at some point I will either just run out of money or just quit and decide to save some for my "delayed" retirement. This will force me to close my doors like so many others before me have had to do. That would be a shame for this family business in its 66<sup>th</sup> year in California. The choice, in large part, is yours.

Sincerely,



Norman R. Brown  
President

## News & Media

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## NEWS RELEASE

Contact: Damien M. Schiff  
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### Most CARB science-panel members have overstayed their terms of office, charges PLF lawsuit

*Science-panel members "aren't regulators for life," says PLF attorney; elected officials charged with appointing must stop neglecting their oversight of this CARB regulatory panel, so there will be potential for new blood and fresh perspectives.*

**Sacramento, CA; June 18, 2009:** Most members of the scientific panel for the California Air Resources Board are serving beyond the legal limit on their terms of office, and a court should order that proper nomination and appointment of replacements take place. So argues a lawsuit filed today by Pacific Legal Foundation attorneys, representing various businesses that are subject to CARB regulations.

Filed in California Superior Court for Sacramento County, the lawsuit asks the court to order the appointing authorities – the secretary of the California Environmental Protection Agency, the speaker of the state Assembly, and the state Senate Rules Committee – to fulfill their legal duty to carry out the nominating and appointing process to replace members of CARB's nine-member Scientific Review Panel (SRP) who have overstayed their terms without being renominated.



Damien M. Schiff  
PLF Attorney

"CARB officials, including its scientific review panel, cannot be allowed to consider themselves regulators-for-life, and they are not above the law," said PLF attorney Damien Schiff. "This lawsuit aims to make sure that there is accountability in the regulatory process – accountability to the law, to the people, and to the checks and balances that are a fundamental element of democratic, representative government."

The SRP is a panel of scientific experts that must review any CARB proposal to label a substance in the air as a toxic air contaminant. Such designations are highly significant, because CARB can follow up with regulations on economic activity that generates the substance. For instance, CARB has adopted or is considering a variety of heavy-handed regulations on diesel-engine emissions – regulations that pose a severe economic threat to many businesses that use diesel trucks.

The Health and Safety Code explicitly sets a three-year term for each of the SRP's nine members. Five members are appointed by the Secretary of Environmental Protection, two by the Senate Committee on Rules, and two by the Speaker of the Assembly. All are to be appointed from a pool of nominees, with appropriate scientific and academic credentials, submitted by the president of the University of California.

However, CARB's Web site indicates that the majority of currently serving Panel members have held their positions for over a decade, and a letter to PLF from the U.C. President's Office confirms that the U.C. President has not been regularly consulted for a nominee pool and has made no nominations since 2004.

"The principle behind our lawsuit is, 'No regulation without representation,'" said PLF's Schiff. "In a democratic system, the regulators must be directly answerable if not to the electorate, then to officials who themselves are representative because they answer to voters. In the case of the scientific review panel, the lawfully designated appointing authorities are all answerable to voters – members of a Senate Committee, the speaker of the Assembly, and one of the governor's cabinet members. These officials must be ordered to fulfill their duty and provide real and active oversight of the regulatory process by putting forward new nominations for the CARB science panel, as the law requires."

"This kind of oversight is especially urgent for CARB, an agency that has become notorious for imposing regulations that threaten to kill jobs and stifle economic recovery," Schiff continued.

“It is vital that CARB and all its regulators and advisors be fully accountable to the people,” said Norman R. “Skip” Brown, president of Delta Construction Co., Inc., in Sacramento, and one of the plaintiffs in the case. “When the law requires oversight and, hopefully, new blood and fresh perspectives on a CARB panel, the law shouldn’t be ignored. Accountability is essential because CARB’s regulations have been so onerous for the California economy. For instance, CARB’s regulations on diesel engines are forcing businesses to replace perfectly good trucks and equipment – or shut down if they can’t afford to comply.”

In this litigation, PLF attorneys represent:

1. Skip Brown, president of Delta Construction Co., Inc., a Sacramento company that uses diesel trucks and equipment, and is dramatically affected by CARB regulations that limit the use of diesel-operated engines;
2. Robinson Enterprises, Ltd., a Nevada City firm involved in construction, logging, trucking, hazard material removal, and petroleum products;
3. North Bay Corporation, a refuse and recycling company;
4. California Dump Truck Owners Association, an association representing over 1,100 trucking companies and 125 affiliate members;
5. Southern California Contractors Association, a not-for-profit mutual benefit trade association;
6. Construction Industry Air Quality Coalition, a not-for-profit mutual benefit corporation that assists the construction industry and regulatory agencies in the development of environmental regulatory strategies that will balance the goals of a healthy environment and a healthy local economy with the least adverse impact on the construction industry;
7. Crane of Ukiah, Inc., a building and engineering construction firm;
8. Diamond D General Engineering, Inc., based in Woodland, CA; and
9. MHS Corporation Compaction Rentals, based in West Sacramento.

The case is *Brown v. Adams*. The complaint is available at PLF’s Web site.

#### **About Pacific Legal Foundation**

Pacific Legal Foundation is the oldest and most successful public interest legal organization that litigates for limited government, property rights, and a balanced approach to environmental regulation, in courts nationwide.